

# PUBLIC WORKS

## PUBLIC WORKS COMMISSION

David DeLong, Chair  
Andrea Solomon, Vice Chair  
Jef Fasser  
James Terry  
Sven Weber

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 [www.concordma.gov](http://www.concordma.gov)

Highlights of the Commission's activities for 2022 included (in chronological order):

- Conducted a Roads Program briefing including details regarding the five year plan for appropriate levels of funding for roads and associated infrastructure needs.
- Discussed articles for Town Meeting including the Scenic Roads Bylaw sponsored by the Historic Commission and how Concord Public Works will be involved in this process going forward. Subsequent meetings went into more detail about the Scenic Roads Bylaw, including Commissioner Solomon being appointed to

represent the Commission at a Planning Board Public Hearing and regulation updates provided by the Town Planner. Other articles discussed at multiple meetings included the Capital Improvement and Debt Plan, Establishing an Electrification Trust, Reformatory Branch Trail Study and Preservation, and a Zoning bylaw amendment for the Zoning Map and Thoreau Depot Business District.

- Reviewed the Enterprise Fund Capital Plan, focusing on Water/Sewer supported by user fees or special service charges. Integrated water resource planning represents a program of interest which includes balancing environmental impacts of drinking water, stormwater and wastewater services. Within the next five years the Water Division will add new debt relating to the Nagog Pond Water Treatment Plant construction. The long-term plan for the Water fund is healthy. A Enterprise Budget Draft Plan was also presented at a subsequent meeting.
- Reviewed and voted affirmatively to approve a Water Main Extension on Pond Street extending the existing dead-end water main along the paved public portion of the street.
- Reviewed the snow and ice removal policy for Sunnyside Lane relative to an extension of the road being created. It was determined that this portion of the private way will continue to be eligible for snow removal.
- Conducted the Water and Sewer Rate public hearing and approved the FY23 rate schedules.
- Conducted a Roads Program update relating to current budget and costs affecting this program. A subsequent review was also conducted detailing the alternative road treatment methods.
- Expressed appreciation to KC Winslow for her years of service as a Public Works Commissioner.
- Conducted a Public Hearing and approved curbside collection and disposal rates effective October 1, 2022. There was no change in the cost of weekly disposal tags or six-month barrel stickers.
- Conducted an update regarding the Nagog Pond surface water system where Concord has been preparing for the installation of a federally compliant filtration facility for the past thirty years.

Preparations are underway to pull together a more detailed design of the facility at an alternative location, due to the difficulties encountered with the original location.

- Reviewed and voted to prepare a memorandum for signature by the Public Works Commission outlining groundwater protection and mitigation recommendations to be considered for the Concord Public School's waiver request to exceed the "impervious cover" threshold as specified within the Groundwater Conservancy District Bylaw for Concord's Middle School located at 8 35 Old Marlborough Road.
- Presented a capital budget overview as part of the first step in a formal long-range Town-wide budget planning process for FY 2024-28.
- Reviewed and voted affirmatively to approve an increase in peak sewer design flow of 2,463 gallons per day as requested by 13B WC Acquisitions LLC, owner of 13B Commonwealth Avenue with outlined recommendations.
- Reviewed and approved recommendations for letters of support for Community Preservation Committee applications for the Sleepy Hollow Cemetery Stone Wall Restoration and Civil War Soldiers' Monument Conservation and Preservation Project.
- Conducted a review of the General Fund Capital Improvement Plan for FY24.
- Heard a presentation on winter storm response planning and logistics performed by Concord Public Works.
- Presented a National Pollutant Discharge Elimination System Wastewater Permit update.
- Conducted a discussion regarding a Water & Sewer appeal for 185 Central Street which was postponed to a future meeting.
- Reviewed the draft 2023 Roads Program with a recap of the 2022 program, including the pavement management strategies that were put in place.
- Reviewed upcoming Town Meeting warrant articles. Thus far the only articles of interest are those included in the consent calendar.

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**

Mr. Brian Davidson, Chair  
Mr. Rod Riedel, Vice Chair  
Mr. Jerry Soucy  
Mr. Geoffrey Walton

Concord cemeteries are an important asset to the Town of Concord. Visitors, historians and residents use them as a window to the past, pleasant places for solitude and contemplation, as well as a final resting place. Concord cemeteries, including Old Hill (1635), South Burying Ground (1697), and Sleepy Hollow (1855) total about 55 acres. Concord Public Works staff manages the Town's cemeteries, facilitating burials and cemetery upkeep, while also conducting plot purchases and sales. Concord is fortunate to have such hard-working public servants in the positions they devotedly fill.

The Concord Cemetery Committee consists of five members responsible for oversight of the operation and maintenance of all Town owned cemeteries and burial grounds, and for establishing policies and procedures for the cemeteries. The Committee saw two important members; Chair Leo Carroll and Ms. Rebecca Purcell, depart in 2022 and the Committee wishes to convey their appreciation for all they accomplished. Mr. Geoffrey Walton joined the Committee as its newest member, and the Committee continues its search for a fifth member.

### **Cemetery Grounds Maintenance**

Concord Public Works Staff and the Cemetery Supervisor manage the operations and maintenance for the grounds throughout the year. In addition, Einstein's Landscaping was contracted to provide another year of cemetery lawn care and seasonal cleanups in Sleepy Hollow Cemetery. Mayer Tree Services, contracted by the Town, conducted tree maintenance, addressing a number of dead and hazardous trees.

## **Cemetery Subcommittees: Columbarium and Cemetery Landscape and Groundcover**

- The Columbarium Subcommittee continued to study building a columbarium in Sleepy Hollow's Knoll section. Since a 2018 public hearing on gravesite supply, the Committee has been aware of a demand in Concord for a structure for the inurnment of cremated remains. The Subcommittee identified an area in the Knoll Section that was ideal for a columbarium, a Town engineering review was conducted, a Request for Proposals ("RFP") for the design and construction of a columbarium was issued, and these RFPs are currently under review.
- The Cemetery Landscape and Groundcover Subcommittee concluded its work to address the issue of soil erosion, which has long plagued Sleepy Hollow Cemetery. Sleepy Hollow's topography, combined with a lack of irrigation and poor vegetation growth, has created areas of significant soil erosion. The Town has placed fresh loam in many sections with varying degrees of success. The Subcommittee members provided a presentation to the Committee suggesting certain trees and groundcover that they thought may mitigate erosion in certain areas. The Committee will work to implement the Subcommittee's recommendations over the course of several years.

## **Master Plan Project Update**

- Stone Wall Repair – Old Hill, South Burying Ground, and Sleepy Hollow: Town staff and Wright-Pierce, one of the engineering firms utilized by Concord Public Works Engineering Division, conducted an inspection and assessment of the stone walls on all cemetery properties. The detailed report identified the stone wall conditions (good, fair, poor), providing some options and probable repair costs. In particular, large sections of the Old Hill stone walls were deemed to be in poor condition. The Committee is supporting a Community Preservation Application that requests funding to repair these historic cemetery walls.
- Records Scanning: Boston Computer Scanning completed its project for the scanning and recording of the Cemetery's hand-written paper records into a secure accessible electronic

format. In addition to being more secure, the electronic records, coordinated via GPS, show a mapped location of each grave. Access to the database can be found at <https://concordma.gov/1956/Sleepy-Hollow-Cemetery>. Boston Computer Scanning was hired in 2020 to do the work with a contract bid for \$9,547.

- Headstone Restoration Project: Amos Doolittle's 1775 plate, depicting the events of the April 19th Alarm, includes an early image of the Town's burial ground with broken and leaning headstones. Almost two and half centuries later, the fight against time and elements continues with a number of older headstones that are in need of repair or restoration. Cemetery staff did a superlative job of photographing all such headstones and creating an inventory and priority repair list. In 2022, Concord Public Works solicited bids for this work, and a contract for \$19,800 was awarded to Historic Gravestone Services. To date, 16 of the 33 stones identified have been repaired and/or restored. The remaining 17 stones will be restored in the spring of 2023.
- Mausoleum Lots: At the end of 2020, the Committee celebrated the approval of six mausoleum lots, three lots near the Pope Tomb, and three lots in the Knoll section. The Committee endorsed the name, Juniper Path, for the mausoleum section of the Knoll, keeping with the past tradition of naming roads in the Knoll alphabetically using tree names. The Committee approved a conceptual plan from a prospective mausoleum buyer, which would be the first mausoleum built in Town in over a century. The project is moving forward with multiple Town departments participating in the final design and construction plan.

## **Cemetery Woodlands and Trails**

The Committee spent time reviewing the important woodlands and trails that are part of the Sleepy Hollow Cemetery's property. This area is fundamental to supporting the goal of a garden cemetery. It contains Cat Pond, the Cemetery's water feature, is part of the Authors Ridge vista, it provides visitors an area of reflection, and incorporates the nature concept that was such an integral part of the cemetery's transcendentalist residents. The Committee monitored proposed changes to,

and studies of, the Reformatory Branch Trail on its northern border. It also encouraged the distribution of the 2021 Reformatory Branch Trail map, which includes information regarding the cemetery, throughout Concord.

### **Memorial Day/Veteran's Day**

American flags were installed on the veterans' graves in Sleepy Hollow Cemetery in preparation for Memorial Day with the assistance of volunteers. At the end of the year, the flags are removed by Cemetery staff and are retired at the annual flag burning ceremony during the Veterans' Day Observance.

### **Statistics**

For 2022, there were 109 interments at Sleepy Hollow Cemetery. 48 of these interments were Concord residents at the time of their death. 41 of the interments were full burials and 68 were cremations. Lot sales for the year totaled 109 with 26 of those being sold to eligible former residents.

### **Friends of Sleepy Hollow**

The Friends of Sleepy Hollow Cemetery, Inc. (FOSHC) is a private, non-profit organization whose purpose is promoting the preservation, beautification and appreciation of the historic burial grounds in Concord. The FOSHC's Board of Directors, led by President Kevin Plodzick, contributed new iron bollards in front of the Melvin Memorial, and received approval to enhance the Knoll Gate. The Committee was delighted to recognize the FOSHC's 20th Anniversary in existence this year and appreciate the history of generous and thoughtful contributions the FOSHC has made to Sleepy Hollow Cemetery. FOSHC member and former Committee member, Andrea Solomon, is serving as the FOSHC liaison to the Committee.

## **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.

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

Concord Public Works (CPW) is comprised of four Divisions. These include two staff Divisions, Administration and Engineering and two line Divisions, Highway & Grounds (which includes Recycling, Solid Waste Management and 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.

### **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. In January of 2022, the Highway & Grounds Division took over the day-to-day management and administration for the municipal Curbside Solid Waste and Recycling Program. The Department also wished Anna Trout, Administrative & Special Project Administrator, and Paul Reinhardt, Management Analyst, two valued and dedicated, long-standing team members, happy retirement.

### **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 2022.

## **ENGINEERING DIVISION**

Stephen Dookran, P.E. Town Engineer

Concord Public Works (CPW) Engineering Division is responsible for the planning, design, engineering and construction administration of the Town's roadways, sidewalks, bridges, and stormwater/drainage infrastructure assets. Engineering provides a wide range of professional engineering, construction management, and permitting administration for other CPW divisions as well as for other Town departments and divisions. These responsibilities are carried out by a team led by the Town Engineer and includes the Assistant Town Engineer, the Public Works Engineer, two Assistant Public Works Engineers, the GIS Technician/Analyst and the Administrative Assistant. During 2022, the changes in staffing included the resignation of the GIS Technician/Analyst in September and this position remained unfilled through the end of the year and also the hiring in December of the vacant Assistant Public Works Engineer position whose duties are primarily related to environmental/stormwater engineering.

### **Roadway Improvement Projects**

Selection of streets for pavement improvements was based on the pavement management program, StreetScan. A field survey by StreetScan conducted in the summer of 2021 determined that the average

pavement condition (PCI) of the 108-mile road network was 67 out of 100. A review of the pavement management program by Stantec at the end of 2022 estimated the average PCI was 68.

### **Final Construction of the 2021 Roadway Improvement Project**

The 2021 Roads Improvement Project with work primarily in the Prescott Road neighborhood was substantially completed in 2021, but the items that remained for final completion including addressing drainage issues on property frontages, re-grading impacted front yards, seeding, and street sign replacement were completed in 2022.

### **Design, Bidding and Construction of the 2022 Roads Program Projects**

Engineering staff prepared final design and bid documents. The program was broken up into three phases of work and the three separate phases were put out for bid in the winter and spring of 2022. Phases I and II of the project were new trial preservation treatments aimed at improving the road PCI while being less expensive than standard pavement rehabilitation and reclamation. Staff provided inspections and contract administration for all the phases of the program.

#### **Phase I - 2022 Roadway Improvement Project**

This portion of the 2022 Roads Program incorporated asphalt rubber pavement preservation on Barretts Mill Road, College Road, Annursnac Hill Road, Hildreth Lane, and Farmers Cliff Road totaling approximately 3 miles.

#### **Phase II - 2022 Roadway Improvement Project**

This portion of the 2022 Roads Program incorporated pavement preservation using microsurfacing on Prairie Street, Pleasant Street, Wright Road, and Hildreth Lane, which totaled approximately 1 mile. Also included was fog sealing preservation on Lowell Road and a portion of Monument Street (a remainder of Monument Street will be completed in 2023), which totaled approximately 3.37 miles.

#### **Phase III - 2022 Roadway Improvement Project**

This portion of the 2022 Roads Program incorporated the traditional mill and overlay rehabilitation methods and pavement reclamation. In 2022, reclamation and reconstruction were

performed on Raymond Road, Alden Road, and Anson Road, which totaled approximately 0.73 miles. Pavement mill and overlay rehabilitation was performed on Old Mill Road, Stacey Circle, Autumn Lane, Pheasant Lane, and Monument Street (at Sawmill Brook), which totaled approximately 0.87 miles. Remaining work on the Phase III contract consists mainly of the Commonwealth Avenue Complete Streets project that was pushed to spring 2023 due to delays by National Grid on its gas main work and from material shortages.

### **Road Crack Sealing**

In 2022, Engineering prepared bid documents and executed a contract that implemented 20 lane miles of crack sealing on selected streets throughout the town. This was an important part of the total pavement management program.

### **Hubbard Street Improvements Project**

Following the completion of drainage, sewer and underground utility work in 2021, the installation of granite curbs, reconstruction of the roadway and sidewalks, striping and signing were completed in 2022. The project has addressed persistent drainage problems and improved pedestrian safety by adding curbed bump-outs and installing ADA curb sidewalk ramps. Final completion will be achieved in 2023 when the punch list items are performed.



*Hubbard Street Final Paving*

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

Curb Ramps Improvements – Reconstruction of sidewalk curb ramps to meet ADA requirements was incorporated into paving projects. These reconstructed curb ramps include 9 ramps on

Hubbard Street, 1 ramp at the Stow Street Parking Lot, 4 ramps on Prairie Street, 1 ramp on Pleasant Street, and 2 ramps on Wright Road for a total of 17 new curb ramps.

**Crosswalks** – Existing painted crosswalks were repainted. One new painted crosswalk located at the intersection of Hubbard Street and Devens Street was added in 2022.

### **Pavement Markings**

Engineering in conjunction with the Community Safety Officer of the Police Department implemented the annual town-wide pavement markings project using two contracts in 2022. The project included the remarking of centerlines, shoulder lines, parking, crosswalks and stop bars. About 50% of the work was completed because of reported personnel and material shortages affecting the contractor's ability to perform all the work. The Highway and Grounds Division also completed a portion of the restriping.

### **Parking Lots**

The Stow Street Parking Lot adjacent to the Concord Free Public Library and the Umbrella Arts Center was reconstructed in 2022. The work included regrading of the lot surface, curbing, repaving, ADA walkways and signage. The pavement striping was reconfigured to obtain an additional 12 spaces including an additional handicap parking space. This project also included the installation of underground conduits for a future electric vehicle charging station as well as an improvement to drainage by collecting and infiltrating more stormwater.



*Stow Street Parking Lot Reconstruction Completed*

The municipal parking lot at the intersection of Stow Street and Hubbard Street was milled, repaved, and the pavement markings were redone in 2022.

### **Guardrail Projects**

Engineering prepared design plans and construction details for the replacement of approximately 2,000 linear feet of existing roadside guardrail that are in disrepair and subjected to a significant volume of traffic. The locations for this project include Sudbury Road, Elm Street, Barretts Mill Road, and Old Road to Nine Acre Corner. This project will be advertised for constructed in spring of 2023.

### **Stormwater/Drainage Improvements**

Under the Roads Programs and the Stow Street Parking Lot reconstruction, Engineering designed and implemented asphalt berms and regrading of the finished paved surface to direct stormwater to existing drainage structures or to vegetated roadsides. This work helped to prevent erosion of the edges of roadways, reduce puddling in the street and promoted groundwater recharge.

Multiple drainage infrastructure improvements included replacement of 14 failed catch basin structures, and the installation of 1 new leaching catch basin, 94 feet of new concrete pipe, and 25 feet of new plastic pipe.

### **Town-Wide Culvert and Bridge Assessment**

The Engineering Division selected a consultant, Wright-Pierce using the qualifications-basis process to perform the Town-wide Culvert and Bridge Asset Management Plan. The goals of this study on the 176 culverts and 8 Town-owned bridges are first to identify any critical needs on these structures and then to develop a maintenance and repair plan for the short and long terms. The consultant has performed their field assessment on the culverts and bridges and has made progress on the analysis of the priority repair work. The study will be completed in early 2023. CPW Engineering will use this report to plan future projects.

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

The Town with the assistance of its consultant, filed the Year Four Annual report in September 2022 on the year's activities. These activities included:

- Mapping update of the Town's stormwater

infrastructure including outfalls and conveyance systems, and refined catchment delineation. While not yet available, this map will become available to the public.

- Annual training to employees involved in the Illicit Discharge Determination and Elimination (IDDE) program completed on June 23, 2022 and included classroom instruction and field component which involved assessing drainage structures and using field test kits and equipment.
- Maintaining of the Town's MS4-related activities for municipal reporting.
- Assabet River Phosphorus Water Quality Impairment – Since the Assabet River has a phosphorus water quality impairment, the Town is required to complete the requirements in Part II of Appendix H to the MS4 Permit as owner of 99 outfalls to the Assabet River Watershed. Engineering staff worked with the consultant to complete one key component of this requirement, a Phosphorus Source Identification Report which included:
  - ◇ Calculation of total MS4 area draining to the Assabet River and associated outfall catchments
  - ◇ Incorporation of screening and monitoring results from the IDDE Plan, which staff will continue
  - ◇ Calculation of impervious area and directly connected impervious area (DCIA) for target catchments
  - ◇ Identification, delineation, and prioritization of potential catchments with high phosphorus loading
  - ◇ Identification of potential retrofit opportunities for installation of structural BMPs within the Assabet River watershed

### **Public Participation and Education –**

- Engineering staff continued the public participation and education program to educate the Town's residents on stormwater issues. Brochures were distributed among residents educating on the importance of Stormwater Best Management Practices, proper lawn care to minimize impairments to rivers, lake and streams, and proper disposal of pet waste and management of septic systems to mitigate pollutant loading of stormwater. During the Cooler Concord Sustainability

Series (4/30/2022), staff took the opportunity to engage with the public about issues affecting the Town's waterways. Staff used an Enviroscape model, which is an educational tool that shows water pollution from residential, recreational, agricultural and transportation areas. The model also shows prevention through shared responsibility and public awareness.

- Modification of the Town's Stormwater Management Plan and regulations was also started. The documents updated include: Phosphorus Source Identification Report provided to Town for review and implementation, Street Design and Parking Lot Guidelines Analysis, and Green Infrastructure Feasibility Analysis memo provided to Town for review and implementation, Municipal Operations and Maintenance Manual, and Illicit Discharge Detection and Elimination (IDDE) Plan.

**Right of Way/Driveway Permitting**

Engineering staff issued a total of 255 permits - 168 Right-of-Way permits and 87 Driveway permits utilizing the new Full Circle platform for digitally executing the permit. R-O-W permits were typically issued for the installation or repair of utility mains, structures or service lines or for impacts caused by private development work to infrastructure in the public right-of-way. Driveway permits were typically issued for the reconstruction of or the installation of a new driveway that accessed the public right-of-way. Staff also performed pre-, during- and post-inspections of the work sites for each permit.

166 Main Street. Staff also performed field observations of soil testing for stormwater management.

**Town-Requested Engineering Services**

- Performed AutoCAD work for Concord Cemetery to help incorporate a new database and interactive map
- Surveys to determine if various trees that require removal are located inside the Town's Right-of-Way or are inside private property
- Aided DPLM in preparation of grant requests
- Engineering support on the phases of the Bruce Freeman Rail Trail under development and further reviews of the NPS Battle Road Trail.
- Engineering services and communications for the Traffic Management Group

**GIS**

GIS staff continued to provide support for the Work Order System for the Highway & Grounds Division and started the development of a similar system for Water/Sewer 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, catch basin cleaning, sewer manhole inspections, registered irrigation, chlorine sampling and compost stickers. GIS staff continued to provide support for the electronic permitting system (Full Circle) for driveway and right-of-way permits and for mapping required by the Federal EPA MS4 permit.

<b>Right-of-Way and Driveway Permits by Year</b>					
	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Right-of-Way Permit Applications</b>	110	117	177	128	169
<b>Driveway Permit Applications</b>	90	96	101	71	87

**Private Development Plan Reviews**

Staff reviewed a total of thirteen private development projects in 2022 but those that required a more significant effort were: Sunnyside Lane Definitive Subdivision Plan being developed at the end of the existing Sunnyside Lane, Concord Middle School at 835 Old Marlborough Road, Concord Academy Centennial Arts Center at

### Grants of Location for Utilities in Public Ways

Engineering staff performed reviews on plans and documents submitted to the Select Board by utility companies petitioning for approval to locate new utility lines, services and appurtenances overhead or underground in the public right-of-way. For the completed reviews, Engineering forwarded its comments and conditions of approval to the Select Board prior to the scheduling of the public hearings. The projects are listed below with the status of the GOL. Upon approval, the utility company will file for a right-of-way permit for the installation of the new line.

<b>Utility Company</b>	<b>Location</b>	<b>Status</b>
National Grid	Walden Street Main Reinforcement Project	Approved
National Grid	Monument Street request	Approved
National Grid	Commonwealth Ave, Bradford Street, and Beharrell Street request	Approved
National Grid	150 Lexington Road request	Pending
National Grid	Main Street from Edgewood Road to Winslow Street request	Pending
National Grid	Crescent Road, Hosmer Road, Garland Road, Wilson Road, Nashoba Road request	Pending
National Grid	Simon Willard Road request	Pending
National Grid	Lowell Road request	Pending
National Grid	Davis Court request	Pending
Comcast	Elm Street request	Approved
Comcast	Main Street	Approved
Comcast	Monument Street request	Approved
Comcast	Old Bedford Road request	Approved
Comcast	Lexington Road request	Approved
Comcast	Bedford Street/Old Bedford Road request	Approved
Comcast	Barrett's Mill Road request	Pending
Comcast	Laws Brook Road request	Pending
Comcast	Plainfield Road request	Pending
Comcast	Monument Street GOL request	Pending
Comcast	Court Lane request	Pending
Verizon	T.85/E.85 (Monument St) Petition for Joint Pole Location request	Pending

## HIGHWAY AND GROUNDS

Aaron Miklosko  
Highway & Grounds Superintendent

### Highway & Grounds Division

The Highway & Grounds Division of Concord Public Works maintains approximately 107 miles of public streets, along with the associated drainage systems consisting of approximately 62 miles of drain lines, 3,630 catch basins, 216 culverts, 1,640 drainage manholes, 431 outfalls, 162 leaching structures, 15 detention basins, 7 bio-retention areas, and 3 dams. The Highway & Grounds Division also maintains 58 miles of sidewalks, 3,055 signs, over 90 vehicles and pieces of equipment and 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. The Highway & Grounds Division maintains all 23,000 public shade trees and park trees under the direction of the Town's Tree Warden.

### WINTER MAINTENANCE PROGRAM

Concord's winter maintenance program requires accurate prediction of winter weather events and formulating strategic plans for the deployment of staff and resources. CPW relies on many resources to achieve this, including real-time weather forecasting information provided by the Town's contracted weather service, Precision Weather Forecasting. Concord Public Works also utilizes roadway weather information system technology in five strategic locations in Concord to help provide the real time data necessary to prepare and respond to winter events.

Winter maintenance activities include de-icing, roadway plowing, sidewalk clearing and snow removal from municipal lots and business districts. Concord's winter maintenance program has many components, including an anti-ice pre-treatment in which CPW crews apply a brine solution to designated roadways in Concord when conditions allow. This is an environmentally sustainable technique that prevents snow and ice from bonding 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 impacts.

The first significant winter response during the

2021-2022 season occurred on December 8, 2021, with an accumulation of ice. The largest accumulation event was January 29-30th, 2022 which resulted in 18 inches of snow accumulation and required a 45.5 hour operation for the CPW crews. Throughout the season, CPW responded to 31 winter weather events and the Town saw a total of 45.5 inches of snow.

### ROADS, SIDEWALK and DRAINAGE MAINTENANCE

CPW's Highway & Grounds Division completed routine maintenance and improvements to Concord's roads and sidewalks throughout the year.

Concord Public Works crews began preparations for the annual Patriots' Day Parade in early March. This included sweeping the streets and sidewalks, leveling stone dust sidewalks and raking out the open space areas along the route.

The spring town-wide street sweeping program was completed by July 1st this past year. CPW continued to perform additional sweeping of arterial roads again in November and December 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. Staff also continued weekly sweeping in the business districts, which include Concord Center, Thoreau Depot and West Concord.

Street sign maintenance was prioritized by CPW via the Town's Traffic Management Group. This group includes representatives from Highway & Grounds, Engineering, and the Concord Police Department. CPW prioritized improvements affecting sightlines for signage and pedestrian safety.

During the spring season, roadside mowing began. Concord Public Works staff utilized its boom-mounted rotary mower, which was designed to be used with a front loader. This specialized piece of equipment has greatly improved the efficiency of this process. CPW staff prioritized trimming in areas where vegetation and affected traffic sightlines and pedestrian safety.

Full-depth roadway patching, sidewalk reconstruction and drainage infrastructure repairs

continued to be a major priority for the Highway & Grounds Division during the construction season. Many of the repairs were identified during routine inspections that were conducted as part of the catch basin cleaning program. CPW cleaned over 500 catch basins in 2022, removing over 130 cubic yards of material from the storm drain system. Ongoing monitoring and maintenance of other environmental infrastructure including bio-retention areas, detention basins, drain swales, culvert headwalls and outfalls continued in 2022.

### **COMPOST SITE MANAGEMENT**

The Town's compost site at 755 Walden Street was open seasonally Wednesdays and Saturdays for residents to access the site for the disposal of brush, leaves and invasive species. In 2022, this facility was visited over 17,500 times by residents during the months of April – December. CPW continued to utilize the compost site for equipment storage and as a staging area for surplus wood debris generated from tree maintenance activities. During the winter season, the site is used for snow storage, which is hauled to this location from parking lots and business district areas following snow plowing events.

### **PARKS AND GROUNDS**

CPW's Highway & Grounds Division continued to provide a high level of maintenance service at the Town's parks, athletic fields, traffic islands and outdoor facilities in 2022.

Regular maintenance schedules continue to be a priority for the Highway & Grounds Division. Maintenance activities were completed in an environmentally sensitive and sustainable manner. Frequent mowing, ball field preparation and field painting was completed with a goal of providing high quality and consistent playing conditions for Concord's youth sports programs and other users within the community. The Highway & Grounds Division also continued to support public-private partnerships with local organizations, such as the West Concord Green Thumbs, to maintain the hanging flower baskets that lined the streets in West Concord and the community gardens.

In June of 2022, the Emerson Park Improvements: Phase I project was completed. This included improvements to ADA access, a new irrigation

system and irrigation wells, a new playground surface and swing set, new drinking fountains, and additional infrastructure upgrades.

### **TREES**

CPW's Highway & Grounds Division and the Town's Tree Warden continued the implementation of the urban forestry management plan, which was developed by Davey Resource Group. In 2022 the Town planted 63 new trees, ranging from Kousa Dogwoods to Elm Trees. These included public shade trees, set-back plantings, and Cemetery trees. CPW tree crews performed routine right-of-way tree maintenance throughout the roadway network in 2022. Trees were trimmed up to a height of 15 feet and over-hanging hazards were removed. The CPW Highway & Grounds Division also responded to several severe storm events, in which trees were damaged or fell into the right of way and required removal.

The Town renewed the tree maintenance services contract in 2022 with Mayer Tree Services. In addition to providing cost effective pruning and general forestry maintenance, this contract also provides for storm and emergency responses for time sensitive hazardous tree issues.

### **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 2022 there were 109 interments at Sleepy Hollow Cemetery. 48 of these interments were Concord residents at the time of their death. 41 of the interments were full burials and 68 were cremations. Lot sales for the year totaled 109 with 26 of those being sold to eligible former residents.

The use of contracted landscaping services continued for the mowing and seasonal cleanup needs of Sleepy Hollow Cemetery with a renewed contract with Einstein's Solutions, Inc. 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.

## 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 3,622 households. Subscribers to the municipal curbside collection program set out 861 tons of mixed paper, 601 tons of commingled containers, and 2,162 tons of solid waste for collection.

## DropOff SwapOff Participants

Year    May    October

2016	918	749
2017	894	947
2018	945	865
2019	930	842
2020	-	425
2021	630	790
2022	685	546

### Curbside Collection Subscribers (as of June 30)

Year	Number of Subscribers	Recyclables collected(tons)	Trash collected (tons)	Recycling Rate
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%
FY21	3,639	1,660	2,648	37%
FY22	3,622	1,462	2,162	40%

### Curbside Recycling Rate

Residents using Concord's municipal curbside collection program recycled 40% 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-December. 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

In 2022, Concord Public Works held DropOff events on Saturday May 14th, with 685 participants and Saturday October 15th, with 546 participants. Pre-registration was required, which assisted with crowd control and traffic flow. The October 15th event brought the return of SwapOff after a two-year hiatus, with new guidelines. These events supported CPW's goal of reducing the number of items in the Town's waste stream. Many volunteers helped make these events possible.

### 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. 172 residents visited the Minuteman facility during the April-November 2022 events.

### Composting Site-755 Walden Street

From April through December 2022, residents made more than 17,000 visits to the 755 Walden Street Compost Site, dropping off leaves, grass clippings and brush. The paint shed on site made it possible for 295 residents to drop off paint and 253 residents to pick up paint for reuse. Styrofoam™ block, string lights and Christmas Trees were also accepted for recycling at the facility after the December holidays.

### 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 October of 2022. The annual landfill inspection report included a summary of the 2022 monitoring results at the landfill. There were no deviations from applicable performance standards in water or air quality identified.

The Town's closed landfill post closure monitoring and maintenance requirements in accordance with 310 CMR 19.132, mandate groundwater and landfill gas monitoring. There are nine groundwater wells and twenty-three soil gas probes associated with the 755 Walden Street closed landfill. The former 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 2022, Concord Public Works collected 9,920 linear feet of fluorescent light bulbs, 2,296 pounds of nickel cadmium, lithium, and lead acid batteries, and 2,163 compact fluorescent bulbs from residents and municipal facilities, for recycling.

**Grants**

Concord Public Works obtained a Recycling Dividends Program (RDP) grant from MassDEP in the amount of \$8,400. The grant can be utilized to purchase recycling-related equipment including but not limited to curbside recycling bins, compost bins, public space recycling bins, etc.

**Textile & Mattress Waste Ban**

In 2022, the Commonwealth implemented new regulations for mattresses and textiles which require they be kept out of the solid waste stream and instead recycled or donated for reuse. This is part of the Massachusetts statewide plan to reduce waste by 30% by 2030. In 2021, the Town of Concord received access to a MassDEP Mattress Recycling Incentive (MRI) grant program for the collection and recycling of residential mattresses. The Town procured a container for the collection of mattresses for \$6,415.50, which was placed at the Compost Site at 755 Walden Street. The Town recycled 50 mattresses at a cost of \$1,700 before the grant expired in November of 2022. For information on how to recycle a mattress visit: [www.concordma.gov/mattress](http://www.concordma.gov/mattress).

Concord residents can recycle their textiles by participating in Concord's textile recycling program, which is supported by Baystate Textiles and offers 8 donation bins at the following school locations: Alcott Elementary School, Concord/Carlisle High School, Ripley Administration Building, Sanborn Middle School and Willard Elementary School.

**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>
2021	12,883	6,243	448	143
2022	12,272	5,671	295	253

## **WATER AND SEWER**

Jeffrey A. Murawski, P.E., 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 are reviewed for conformance with system standards and policies. 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.

### **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 (Nagog Pond), 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 5,690 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**

State Water Management Act (WMA) – On August 9, 2021, MassDEP issued Concord an “Order to Complete” (OTC) initiating a formal WMA renewal process. The OTC included new management and operating provisions relating to drinking water withdrawal “allowances” with consideration of demand management practices to balance environmental protection goals. On April 21st, 2022, the Town submitted WMA renewal application

documents, in response to DEP's Order to Complete. As of December 31st, 2022, Concord has yet to receive an updated Water Management Act Registration Statement.

### **Federal Lead and Copper Rule Revisions (LCRR)**

– EPA has made notable regulatory revisions to the Lead and Copper Rule, effective as of December 16, 2021 with a compliance deadline of October 16, 2024. Several notable developments associated with this new rule include: development of lower lead action levels, development of a public-facing lead service line (LSL) inventory, as well as an LSL replacement plan; increased education outreach and an annual notification requirement to customers with LSLs or service lines of unknown material; annual testing of schools and early education and childcare facilities, and updated sample site selection and sample collection procedures. Staff will continue to monitor developments as they relate to the LCRR and take steps to proactively address the impending new requirements ahead of the 2024 compliance deadline. Concord Water continues to work diligently on developing a comprehensive water service inventory. As part of required triennial sampling, Division staff will be working with 30 homeowners with known lead water services to collect and analyze water samples for both lead and copper during Summer 2023.

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

Concord's 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 identified within the permit include an allowance of 65 gallons per day per capita (RGPCD) for residences and a 10% allowance for system losses (primarily attributed to leaks). In 2022, the total water production required to meet our system demands was 1.91 million gallons per day or 696.0 million gallons for the year. A peak day demand of 3.29 million gallons was recorded on July 29, 2022. The RGPCD and total system losses (or “unaccounted” for water use) were calculated to be 63.6 gals/day and 8.5%, respectively.

**Massachusetts Drought Management Plan:** During 2022, the Commonwealth experienced

lower-than-normal precipitation. Following the Massachusetts Drought Management Plan, the Drought Management Task Force provided the Energy and Environmental Affairs (EEA) Secretary with the following drought conditions recommendations for the Northeast Region:

<b>Normal</b>	<b>Before June 16</b>
<b>Level 1 (mild)</b>	<b>November 14</b>
<b>Level 2 (significant)</b>	<b>June 16, July 13, Dec. 12</b>
<b>Level 3 (critical)</b>	<b>August 9, August 24, September 9, October 7</b>
<b>Level 4 (emergency)</b>	<b>(N.A.)</b>

While record low groundwater and streamflow levels have been reported across the Commonwealth, Concord’s water supplies remain within safe operating levels with no notable water quality or quantity challenges. With that said, the Water & Sewer Division will be performing rehabilitation on the Nagog Pond Intake during early Spring 2023, so will most likely need to place restrictions on outdoor water use in the spring to control peak seasonal demands during this period of work. For more details on the Nagog Pond Intake Replacement Phase 2 Project work, see below.

**Integrated Water Resource Planning Initiative:** Working collaboratively with CPW’s Engineering and Administrative Divisions, as well as with the Town’s Sustainability Director and Department of Planning and Land Management, CPW continued the process of identifying programmatic gaps in our understanding and compliance goals associated with long-term water supply, wastewater, and stormwater programs.

As Concord’s water treatment needs evolve, with daunting changes in drinking water quality requirements anticipated within the near future - specifically associated with Per- and Poly-fluoroalkyl (PFAS) compounds (more auspiciously identified as “forever chemicals”), and escalating cost estimates for the construction of the Nagog Pond Water Treatment Facility, the Division is conducting a long-term water supply assessment as part of the integrated planning process. With local drinking water treatment costs estimated to reach upwards of 50 to 75 million dollars, the Town will

need to make an informed decision about when and if it is appropriate to invest significant resources into local treatment plant upgrades at the Nagog Surface Water Treatment Plant as well as our other water supply sources, or if feasible, would it be more appropriate to connect to the Massachusetts Water Resources Authority (MWRA).

**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. The acoustic survey targeted water mains, hydrants, select gate valves, and select service lines located in the northern half of the distribution system. Two leaks, including one major service leak and one minor hydrant leak, were identified, accounting for an estimated loss of approximately 9.20 million gallons per year. The large leak (service leak at CMLP campus) was repaired on December 22nd, 2022, and the small leak (hydrant in Commerford Road is to be scheduled in early 2023.

The Division continues to maintain its commitment to its comprehensive water conservation program that encourages efficient water use via seasonal increasing block rates, the provision of complimentary residential water saving devices including showerheads, aerators, garden nozzles, rain gages, and toilet fill cycle diverters, as well as customized outreach and assistance to customers who are interested in learning more about indoor and outdoor water savings opportunities. As funds allowed, the Division continued to offer rebates on water saving toilets and high-efficiency clothes washing machines.

**Water Quality and Drinking Water Compliance** In compliance with Federal and State drinking water requirements, Concord tests and reports for a wide range of regulated substances, with routine and non-routine activities. The water quality parameter “Bromate”, regulated with a Maximum Contaminant Level (MCL) of 10 parts per billion (ppb) averaged over 12-months operations, resulted in 11 ppb from Nagog Pond. EPA’s strict adherence to a questionable interpretation of regulatory language fails to provide for a notification “exemption” when a source such as Nagog Pond is used seasonally. As such, on October 11, 2022, a direct mailing was sent

to all customers in Concord and Acton. While staff will continue to work with our consulting engineers and MassDEP to evaluate treatment optimization practices at the existing ozone facility to determine if the low levels of Bromate can be mitigated when Nagog Pond is in operation, we anticipate that Bromate exceedance notices will be mailed to customers in the spring and fall for the foreseeable future.

**Per- and Poly-fluoroalkyl (PFAS) Substances:** In accordance with recently adopted drinking water standards established by MassDEP (2020), beginning in spring of 2021, “quarterly” sampling for these substances began at all groundwater supply sources. To date, all sample results have been below the 20 parts per trillion (ppt) MassDEP MCL, and all ground water supplies have been reduced to annual monitoring. Nagog Pond was sampled in 2022, with sample results below the 20 parts per trillion (ppt) MassDEP MCL.

On June 15, 2022, the U.S. Environmental Protection Agency (EPA) released new health advisories for certain PFAS substances, replacing prior EPA health advisories from 2016. EPA is developing a proposed National Drinking Water Regulation for 2 PFAS contaminants (PFOA and PFOS), with the initial publication goal of fall 2022 and finalizing the rule by the end of 2023. The proposal will include both a nonenforceable Maximum Contaminant Level Goal (MCLG) and an enforceable standard, or Maximum Contaminant Level (MCL) or Treatment Technique.

**Lead Service Line Replacement Program:** CPW’s Water Division continues to eliminate lead service lines in Concord, which account for less than 5% of the active services in Concord. The typical cost for a private contractor to replace a lead service line is \$5,000 or more per the American Water Works Association (AWWA). To incentivize property owners to replace their lead service lines, the Public Works Commission approved a Lead Service Line Replacement Program (LSLRP) in May 2017. This program enables Division personnel to perform work on private property, subject to certain requirements and restrictions, at a cost not to exceed \$1,500. Participating customers are also offered an interest-free 12-month payment plan. Over three

dozen lead service lines have been replaced since the program’s inception, including three lead services being replaced in 2022.

### **Nagog Pond Update**

Environmental Partners Group (EPG) continued to partner with staff and special counsel (Mackie Shea Durning PC) to advance permitting and design needs associated with the Nagog Pond Filtration Plant upgrade. EPG has advanced the site survey and geotech investigations of the preferred alternate site in Concord, on the #1175 Elm Street town-owned property, and has advanced alternate Treatment Facility design layouts in the Preliminary Design phase, incorporating feedback from various representatives and officials from the Town and regulatory agencies. In December 2022, the Division was provided the Draft Preliminary Design Report for review.

In 2021, D&C Construction, of Weymouth, MA completed the replacement of the deep section of the existing 16-inch, cast iron raw water intake pipeline (circa 1909). D&C’s work included the installation of approximately 1,100 linear feet of new 16-inch High Density Polyethylene (DR11). This new section of intake, which extends beyond the limits of the Nagog Pond Cove, was furnished with a new screen assembly equipped with a mechanical cleaning system. The second phase of the Nagog Pond Intake Project was designed in 2022 by Environmental Partners, and was publicly bid on October 19th, 2022, and was again awarded to D&C Construction, of Weymouth, MA on December 9th, 2022. The Nagog Pond Intake Replacement Phase 2 Project will involve the cleaning and lining of the remaining approximate 1,400 linear feet of 16-inch diameter, cast iron raw water intake pipeline. The Phase 2 Project is scheduled to be completed by May 1st, 2023.

### **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:

- **Well Rehabilitation, White Pond Well (04G):** During the Winter of 2022 (Jan. 10th – Feb. 10th, 2022), Denis L. Maher Co., of Sterling, MA, performed well cleaning, well redevelopment, and inspection and assessment of mechanical components of the White Pond Well (Well 04G). Redevelopment restored the well capacity to 31 gallons per foot (gpf) while pumping at 406 gallons per minute (gpm), improved from pre-redevelopment specific capacity of 19.45 gpf while pumping at 230 gpm.
- **Well Rehabilitation, Deaconess Well Site, Front-Well (03G):** During the Winter of 2022 (Feb. 28th – Mar. 25th, 2022), Denis L. Maher Co., of Sterling, MA, performed well cleaning, well redevelopment, and inspection and assessment of mechanical components of the Deaconess Well Site, Front Well (Well 03G). Redevelopment restored the well capacity to 43.82 gpf while pumping at 383 gpm, improved from pre-redevelopment specific capacity of

34.04 gpf while pumping at 224 gpm.

- **Well Rehabilitation, Deaconess Well Site, Rear-Well (10G):** During the Winter of 2022 (beginning December 14th, 2022), Denis L. Maher Co., of Sterling, MA, commenced the well cleaning, well redevelopment, inspection and assessment of mechanical components of the Deaconess Well Site, Rear Well (Well 10G).

#### Water Mains

The water distribution system consists of approximately 136 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. Improvement/replacement projects are prioritized based on age, condition, and material of pipe. Plans and schedules are further refined with consideration to other public works initiatives such as drainage improvements, annual CPW 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

**Annual Water Report Summary Table**

Water Statistics	2022	2021	2020	2019	2018
Miles of Main	136.1	135.9	135.7	134.7	133.6
Hydrants	1,339	1,336	1,330	1,330	1,328
Main Pipe - New (linear feet)	1,025	1,002	1,000	500	442
Main Pipe - Replaced or Rehabilitated (lf)		0	7,932	3,337	6,735
Main Breaks		4	4	3	4
Number of Service Accounts	5,690	5,651	5,641	5,634	5,623
Total Water Demand (million gal.)	696	647	722	664	673
Daily Average Demand (million gal.)	1	1.77	1.97	1.82	1.84
Peak Day Demand (million gal.)	3	3.04	3.85	3.36	3.18
Unaccounted for Water (percent)		12.2	9.9	6.0	6.0
Residential per Capital per day (gal.)	63	62.2	75	66	66
Annual Precipitation (inches)	39.73	54.91	42.26	51.18	57.53
Mean Annual Precipitation (inches)	42.19	42.23	42.16	42.15	42.09
<b>Residential Rate per Unit (unit = 7.48 gal.)</b>					
Base Rate- Step 1	\$0.0677	\$0.0654	\$0.0592	\$0.0564	\$0.0537
Conservation Rate – Step 2 (May 1 – Oct. 31)	\$0.1422	\$0.1367	\$0.1243	\$0.1184	\$0.1128
Conservation Rate – Step 3 (May 1 – Oct. 31)	\$0.1795	\$0.1726	\$0.0583	\$0.1495	\$0.1423
<b>General Service Rate per Unit of 7.48 gallons</b>					
Step 1 - (<50 Units)	\$0.0677	\$0.0651	\$0.0592	\$0.0564	\$0.0537
Step 2 - (>50 Units)	\$0.0859	\$0.0826	\$0.0751	\$0.0715	\$0.0681

had not otherwise existed. During 2022, designer services was procured and awarded to Environmental Partners, for the next planned water distribution system renewal project, where approximately 4,000 linear feet of 8-inch diameter transite water main will be replaced in Butternut Circle, Minot Road, Mallard Drive, Black Duck Road, and Fox Lane. The project is expected to bid in early Spring 2023, for Summer and Fall 2023 construction.

**Emergency Water Main Repairs:** Based on the age and condition of water main located throughout the water distribution system, it is not uncommon for sections to fail. When they do, they can cause sudden pressure drops or water discoloration that can affect a few customers or larger neighborhoods. Depending on the nature and location of each break, individual water service interruptions can also occur and last for several hours. This past year, the Division performed emergency repairs at the following locations:

- Commerford Road service leak, on January 2nd, 2022 (Water & Sewer Operations Crews also responded to a sewer issue on the same day, at Stow Street sewer main blockage, on January 2nd, 2022)
- Harrington Avenue water main leak, on February 19th, 2022
- MCI Concord water service leak, on March 5th, 2022
- Annursnac Hill Road shared water service line break, on June 22nd, 2022
- Barrett's Mill Road water main leak, on July 14th, 2022
- #53 Church Street water service leak, on August 16th, 2022
- #217 Great Road, Acton, MA water service leak, on September 14th, 2022
- #349 Old Marlboro Road water service leak, on September 20th, 2022
- Bedford Street water main leak, on December 20th, 2022
- CMLP Campus water service leak, on December 22nd, 2022

## SEWER SYSTEM

Concord was provided with legislative authority to create a municipal sewer system in 1894. By early 1900 a small, centralized collection system carried 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 approximately 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 1,913 customers, or approximately 35% of the community.

## Regulations and Policies

**Sewage Release Notification Bill:** The Massachusetts legislature enacted a new state-wide sewage notification bill signed into law on January 12, 2021. The purpose of the bill is to increase public notice and awareness of antiquated sewer infrastructure which, based on the original design, can allow for untreated or partially treated sewage discharges to be introduced to public waterbodies. Tasked to develop regulations that will establish specific release triggers and notification procedures, MassDEP promulgated state regulation 314 CMR 16.00 – “Notification Requirements to Promote Public Awareness Of Sewage Pollution” on January 7th, 2022 and became effective on January 21st, 2022. The regulation addresses requirements for public notification for “partial treatment” events at treatment facilities and Sanitary Sewer Overflow (SSO) discharge releases that overflow into the surface waters of the Commonwealth. Provisions set forth in regulation 314 CMR 16 became “required and enforceable” as of July 6th, 2022.

**NPDES Permit:** Concord submitted a Notice of Intent (NOI) on December 1st, 2022 to EPA to operate and discharge its wastewater treatment facility under a new medium-size treatment facility National Pollutant Discharge Elimination System (NPDES) General Permit. With consideration of long-standing wastewater capacity interests of the Town, the NOI submission included the Town's reiterated request for an increase in permitted discharge from 1.2 MGD to 1.4 MGD. Aside from EPA acknowledgement of NOI submission receipt, to date, the notification of authorization approval to discharge via the medium-size treatment facility NPDES General Permit has not yet been received from EPA.

## Sewer Pumping Stations

Sewer pumping stations carry wastewater from local networks of gravity flowing pipes (collection system) and then pump this wastewater to a central wastewater treatment facility located off of Bedford Road. The size and complexity of each pumping station depends upon local land elevations, topography, and the volume of wastewater handled. The Lowell Road and Assabet Sewer Stations are the two largest facilities in Concord, designed to handle flows from the most densely populated and commercialized neighborhoods of West Concord and Concord Center. Six smaller neighborhood lift stations serve less populated areas of Town, with much more modest physical footprints.

The Lowell Road and Assabet Sewer pumping station upgrade designs, completed by Kleinfelder in 2020, was publicly bid and awarded to D&C Construction (D&C) of Weymouth, MA, and the upgrades were constructed from late 2020 and

concluded in 2021. These stations were last upgraded in the mid-1980s and were well beyond their anticipated design life. In 2022, Division Operations personnel have been working to optimize the operation and function of the upgraded Lowell Road and Assabet Sewer pumping stations.

Division crews continued to perform routine operation and maintenance of the eight operating sewer facilities.

## 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 that allow for access and maintenance of this system. 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

<b>Sewer Statistics</b>	2022	2021	2020	2019	2018
<b>Assabet Pumping Station</b>					
Total Pumped (million gallons)	89.50	Unavail-	62.38*	88.18	94.28
Monthly Average (million gallons)	7.46	able at	6.24*	7.35	7.86
Daily Average (million gallons)	0.25	time of	0.20*	0.24	0.26
		report			
<b>Lowell Road Pumping Station</b>					
Total Pumped (million gallons)	312.76	Unavail-	297.27	314.07	350.37
Monthly Average (million gallons)	26.06	able at	24.77	26.17	29.20
Daily Average (million gallons)	0.86	time of	0.81	0.86	0.96
		report			
<b>Bedford Street</b>					
Total Pumped (million gallons)	7.84	7.90	7.41	7.33	7.92
Monthly Average (million gallons)	0.65	0.66	0.62	0.61	0.66
Daily Average (million gallons)	0.02	0.02	0.02	0.02	0.02
<b>Collection System</b>					
Number of Service Accounts	1,913	1,905	1,649	1889	1876
Miles of Sewer Main	34.03	34.03	34.03	34.03	34.03
Main Pipe Inspected (lf.)	0	2,342	48,941	48,000	4,515
Main Pipe Replaced/Rehabilitated (lf.)	0	2,342	12	0	0
Rate per Unit (unit = 7.48 gallons)	\$0.1236	\$0.1212	\$ .1188	\$ .1165	\$ .1153

*\*Based on 10 months – station flow meter bypassed for rehabilitation project*

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 a MassDEP approved Infiltration/Inflow (I/I) Control Plan (2018), the Division completed a trenchless sewer rehabilitation project in the Hubbard Street area of Town, which cured-in-place lined approximately 2,342 linear feet of sewer main. Within 2022, no additional sewers were CCTV-inspected, or smoke tested. Division crews do routinely conduct sewer cleaning using the Division's jetter/vacuum truck, as a part of capacity, management, operations and maintenance (CMOM) best management practices for sewer system operations.

In 2022, one short duration reportable sanitary sewer overflows (SSOs) occurred in the gravity sewer system upstream of the Assabet Sewage Pump Station, on September 26th, 2022. It was discovered that inappropriately disposed rags/wipes caused the Assabet Pump Station's wetwell level control operation system to fail, leading to sewage surcharging up the gravity sewer, to where sewage overflowed a sewer manhole and into Nashoba Brook near to #70 Beharrell Street, in Concord. The SSO event was quickly confirmed, and resolved by manually overriding the compromised level controller. The SSO event resulted in discharge of approximately 3,900 gallons of sewage to Nashoba Brook. This event was the first engagement of the Concord "SSO Public Notification" plan, required by Massachusetts regulation 314 CMR 16.00. The public can sign up to receive notifications of SSOs through the "NotifyMe" function of the Concord town website.

The 12-month (rolling average) of wastewater flow processed through Concord's wastewater treatment plant (through the November 2022 reporting period) was 0.87 MGD, below the 1.2 MGD permitted capacity assigned to this facility. The combined total of the infiltration rate (of groundwater) and the inflow rate (stormwater) into

the collection system was estimated at approximately 30.3% of the total sewer flow for the year. This rate falls within acceptable industry limits and well below the USEPA "excessive" rates benchmark value.

### **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 1st year of a 4-year service contract. The CPW – Water & Sewer Division oversees the plant and the services provided by Woodard & Curran to ensure day to day operation and maintenance is performed in a quality manner and according to federal and state regulations. Within the past year, the facility and associated equipment ran reliably and in compliance with federal and state issued permits and perform all necessary facility upgrades and equipment replacements.