

Coordination with other Committees

In an effort to increase outreach to other conservation-minded and energy related groups in Town, Committee members regularly attend meetings of the Concord Municipal Light Board, Concord CAN and League of

Women Voters, among others. Committee members also serve on the Solar Siting Committee, the Concord Municipal Light Board, the Public Works Commission, and the Sustainability Subcommittee of the High School Building Committee.

CONCORD PUBLIC WORKS

PUBLIC WORKS COMMISSION



James A. Smith, Cynthia W. Wood, Philip Swain, Chair; Nick Pappas, Arthur Fulman, Vice-Chair

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 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 bills; 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

Highlights of the Commission's activities for 2011 included (in chronological order):

- A review of the Hanscom Air Force Base water and sewer privatization RFP.
- A review of the Design and Construction Standards and Details and Storm Water Regulations, followed by a public hearing, and a vote to approve those standards and regulations.
- The annual public hearing and Commission approval to review and revise curbside collection and disposal rates.
- Following an administrative denial and appeal of a request for two sewer connections on a single parcel for 1491 Main Street, a sewer waiver request was approved.
- A public hearing and subsequent sewer extension for 324 Bedford Street – the Caesar Robbins House was approved.
- An after-the-fact public hearing for the removal of public shade trees on Lexington Road for the Minuteman National Historic Park was held, and a Shade Tree Replanting Agreement between Minuteman National Historic Park and the Town of Concord was approved.
- A Roads Program briefing, followed by a formal public hearing discussing the 2011 Roads Program, was held.
- A discussion of various Town Meeting articles occurred; and Commissioner Smith presented the FY 2012 Roads Program Bonding Article at Town Meeting.
- The Water and Sewer Rate public hearing was held, and the 2011 rate schedule was approved.
- Following an administrative denial and appeal of a request for two connections to the Town's sewer system for 506 Old Bedford Road, a sewer waiver request was approved.
- A State of Water Supply Conservation was declared on July 22, 2011 and terminated on September 14, 2011.
- Paul Mahoney was appointed as the Public Works Commission representative on the Wastewater Planning Task Force.
- Two public meetings were held to receive input and discuss details of the Junction Park rehabilitation, and the plans to proceed with the Junction Park rehabilitation were approved.
- A comprehensive Water/Wastewater Strategic Planning discussion occurred over a period of two meetings.

- Commissioner Wood and then Commissioner Pappas served on the Comprehensive Sustainable Energy Committee on behalf of the Public Works Commission.
- Three Community Preservation Act Applications were discussed. These included the Monument Street Wall, Sleepy Hollow Cemetery granite post and chain, and Shade Tree Planting in Historic areas.
- Following an administrative denial and appeal of a request for wastewater flows exceeding the 1000 GPD of title V flow threshold for 9 Independence Court, a sewer waiver request was granted.
- Consistent with the Zoning Bylaw, comments were provided to the ZBA relative to construction of two Title V systems within the Groundwater Conservancy District at 494 Old Marlboro Road.

The Commission continued to review the activities of Concord Public Works through monthly Directors reports, and also set aside time for public comment during each meeting.

CEMETERY COMMITTEE

Frederick E. Macdonald, Chair
 Carole A. Cushing, vice Chair
 Ruth E. Armknecht
 Bridget Rodrigue
 Kathleen Winslow

Concord cemeteries are an important asset to the Town. Visitors, historians and residents use them as a window to the past, as a pleasant place for solitude and contemplation, as well as a final resting place.

Concord cemeteries total about 55 acres. Maintaining these grounds in top condition requires the continued effort of the Cemetery Division staff as well as other Public Works employees. The efforts of all are greatly appreciated.

Sleepy Hollow

Memorial Day and Veterans Day ceremonies were held at Sleepy Hollow.

On-going maintenance/upgrade programs continued to be carried out. Roads were patched, damaged walls were repaired on Front Hill and Author's Ridge, the tree management program continued to ensure the health, safety and aesthetics of the hundreds of trees within the grounds, and the new raised garden beds in the oval at the Knoll were expanded and maintained. Efforts to reduce the flooding at Cat's Pond are on-going. Due to the priority habitat designation of this area, coordina-

tion with the Natural Heritage and Endangered Species Program is required.

Several requests from lot owners to move existing headstones, to erect non-conforming headstones, to sell back lots and to allow non-family members to be buried in lots were received. These requests were all settled with the rules governing the cemetery.

A new sign was installed at the Knoll gate to note the new location of the cemetery office. The Town applied for Community Preservation Act funding for a granite post and chain fence along Bedford St., to replace the current chain-link fence between the first and second and continuing this between the third and fourth gates. The initial application was approved by the Community Preservation Committee and the project will be forwarded to Town Meeting for a final vote.

A new pamphlet was designed to include update/corrected information about the Town cemeteries as well as showing the Knoll section on the map. Most sales of burial plots now take place in the Knoll section of Sleepy Hollow.

Statistics

During 2011, there were 73 interments at Sleepy Hollow and one disinterment. 32 were full burials and 41 were cremations. Of the interments, 29 were Concord residents. Lot sales for the year totaled 72 with 9 of these being sold to eligible former Town residents.

Friends of Sleepy Hollow

The Friends of Sleepy Hollow is a private, non-profit organization whose purpose is promoting the preservation, beautification and appreciation of the historic burial grounds in Concord. Additional information can be found at www.friendsofsleepyhollow.org.

This year, the Friends sponsored the restoration of the ironwork fence in front of William Monroe's gravesite, funded the engraving of Lemuel Small's tombstone, and continued their annual breakfast series.

CONCORD PUBLIC WORKS

ADMINISTRATION

Richard K. Reine,
Director

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, 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 stakeholders.

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 & Cemetery 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, playgrounds, ball fields, and recreation equipment; Town cemeteries; the Town's compost site, 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, 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 56 dedicated individuals with a wealth of experience. It is a team that is passionate about Concord, that takes great pride in their work, and fully understands their stewardship responsibilities.

The Four CPW divisions manage eight programs -- Administration, Engineering, Highway, Grounds (Parks and Trees), Cemetery, Recycling and Waste Management, Water, and Sewer. Two of the programs -- Water and Sewer are totally supported by user fees while two other programs -- Recycling and Waste Management, and Cemetery, are primarily funded from fees.

Infrastructure Improvements and Initiatives

The Divisional Reports that follow summarize a series of initiatives and accomplishments in 2011. Notable accomplishments include:

- The targeted roadway and sidewalk maintenance and management program resulted in the internal design and scheduled construction of approximately 2.5 miles of roadway and 3.4 miles of sidewalk improvements.
- The Town-wide culvert inventory and condition assessment that included elevation data that will be used in future hydraulic models.
- Multiple improvements were made to the Town's drainage system by replacing catch basins and culverts.
- Park and Tree Division staff constructed two outdoor skating rinks located at Emerson Field and Rideout Field.
- Engineering provided technical support for both the Crosby's Corner and Route 2/Concord Rotary projects.
- An agreement was finalized with Massachusetts Department of Transportation to reimburse the Town with up to \$7.5 Million dollars in funding for construction improvements to Cambridge Turnpike resulting from the Crosby's Corner Project.
- Engineering support for the preparation of a design plan to rehabilitate Junction Park, along with negotiations with the Department of Transportation for lease renewal for the property.
- Initiation of a Town-wide GIS Program needs assessment and strategic plan project to identify and prioritize future GIS projects.
- Development of an RFP for a Town-wide sign inventory.
- Park and Tree Staff planted 105+ public shade and park

trees as well as street/scape trees.

- DropOff SwapOff events in May and October included unwanted medication and Sharps collection.
- A grant was received to defray the cost of the Unwanted Medication and Sharps collection.
- The Pine Hill and Annursnac Hill reservoirs were drained, cleaned and inspected, with recommendations for improvements.
- A large section of water main was replaced and drainage improvements were made along Union and Fielding Streets.
- Sewer pipe was replaced along Hubbard, Willow, Fielding and Union Streets.
- Following a competitive bidding process, a new service contract for operation of the Wastewater Treatment Plant was awarded.
- Work continued on the Wastewater Capacity Alternatives Analysis, including an evaluation matrix.
- Final plans and specifications for the overhaul and replacement of the 60-year-old Route 2A Nagog Pond Water pump station located in Acton, MA were completed. A contract was awarded with work to include mechanical, electrical and instrumentation system upgrades and replacement. New Ultraviolet disinfection treatment systems will be installed to comply with Federal Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR).
- A contract was awarded to activate two existing replacement wells at the White Pond well site. Work included the furnishing and installation of all mechanical, electrical and instrumentation needs.
- A contract was awarded for design services for the rehabilitation of the existing concrete dam associated with Nagog Pond water supply. Work includes design improvements to the existing spillway, gate house controls/control valves, site work and limited work on intake piping,

CPW Leadership and Innovation

The Massachusetts Drinking Water Program has recognized the Water Division for its outstanding performance. Concord achieved one of the top compliance scores in the Medium/Large Communities System Category of the 2011 Public Water System's Award Program.

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.

Public Works Week – Middle School Event

Concord Public Works celebrated National Public Works Week on May 20. This was the fifth annual event in which the entire 8th grade from Concord's Middle School has participated. The theme was "Public Works: Serving You and Your Community".

The entire public works team worked with Anna Trout and Doug Shattuck who teaches the Applied Technology course at the Middle School to provide this educational experience which included visits to Concord Public Works at 133 Keyes Road, where the students were provided with interactive demonstrations by CPW staff, a turf management and tree warden demonstration at the Ripley Playing Field and a tour and conservation event at the Wastewater Treatment Plant

Personnel

We were happy to welcome Ian McKenzie as Associate Engineer in the Engineering Division.

ENGINEERING DIVISION

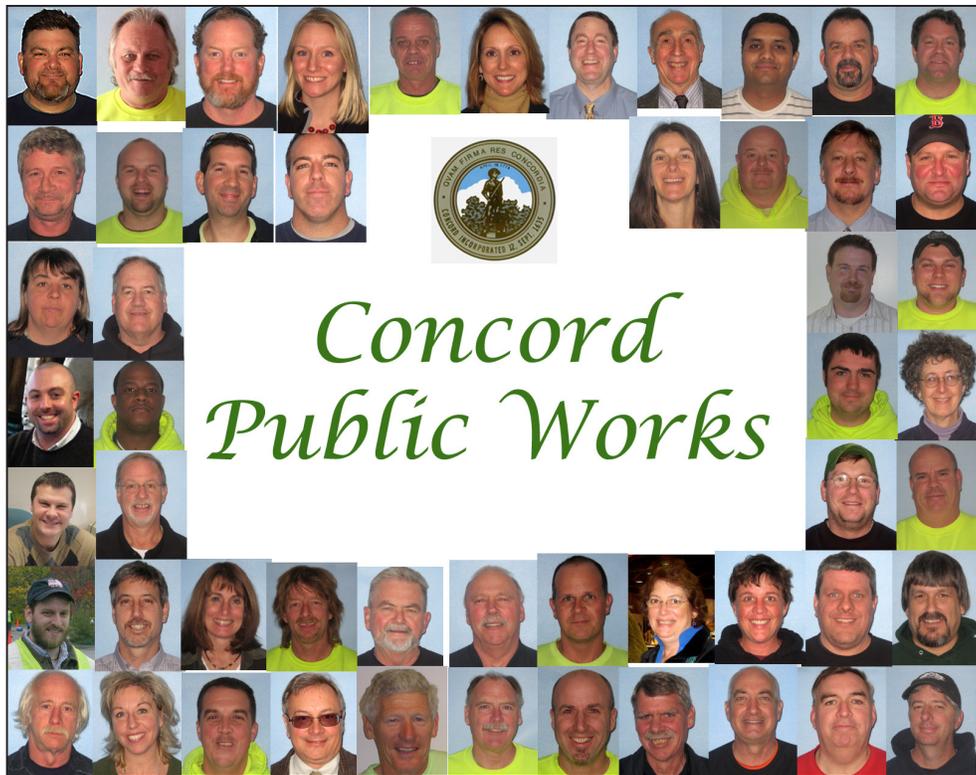
William J. Renault PE,
Town Engineer

The Concord Public Works Engineering Division is responsible for the planning, design, engineering and construction of Town roads, sidewalks, drainage, bridges and stormwater infrastructure assets. The Division provides a wide range of professional engineering and construction management services for Concord Public Works (Administration, Water, Sewer and Highway/Grounds/Cemetery) and other Town departments and boards.

The Division provides Geographic Information System (GIS) services and maintains Town-wide inventories, database, mapping and document control for Concord's public right-of-ways, easements, infrastructure and natural resources.

Roads and Sidewalks Program

There are approximately 107 miles of public roads, classified as arterial roads, collector roads and local streets. Arterial roads provide movement between col-



lector roads, other arterial roads and major highways and make-up approximately 34% of Concord's public roads. Collector roads, used primarily to connect local streets to other collector and arterial roads, make-up approximately 7% of Concord's public roads, and the remaining 59% of public roads consist of local streets. In addition, Concord has 59 miles of public sidewalks.

Concord's pavement management strategy and 20-year Roads and Sidewalks Program emphasizes adequate investment in road and sidewalk combined with preventive and routine maintenance. This program is based on a condition survey of the roads and sidewalks performed every four years. Additionally, CPW evaluates Americans with Disabilities Act (ADA) accessibility standards. This program utilizes pavement management software, in-house engineering/ operations knowledge and Town-wide utility planning to select pavement treatment and maintenance options.

A key element used to enhance road pavement condition is maintenance. CPW utilizes crack sealing extensively as preventative maintenance, along with full depth patching/spot repairs as routine maintenance. The use of these maintenance activities enables CPW to preserve the integrity of existing road structures while

reducing the need for the more costly reclamation and cold plane/overlay pavement treatments.

1.7 Miles of Roads Improved

The 2011 Roads Program included the reclamation treatment on Whittemore St. (coordinated with Water/ Sewer, drainage and CMLP improvements), Union St., Willow St., Fielding St., Hubbard St. (from Thoreau St to Union St), Central St. (from Derby St to Pine St.) and Riverside Ave. (from Derby St to Pine St.). Additionally, the project also included a mill and overlay treatment on Thoreau St., which will be completed in the spring of 2012.

2.5 Miles of Roads Maintained

2011 crack sealing maintenance efforts were deferred for budgetary reasons within FY2011. A portion of the FY2011 crack sealing budget was encumbered for inclusion within the FY2012 crack seal bid. The 2012 crack seal program development was completed in the Fall of 2011 with work scheduled to begin within early spring of 2012. The crack seal program will include: Monument Sq., Upland Rd., Main St. (from Monument St. to ORNAC), Lexington Rd., Lowell Rd. (from the Concord River to the Town Line), Edgewood Rd., Old Marlboro Rd. (Williams Rd. to the Town Line), and Pine St.



Chris Olbrott and Bill Renault teach 8th Graders about surveying during Public Works Week.

CPW Highway Division completed full depth patching in the fall on Carr Rd., Monument St., Ball's Hill Rd., Musketaquid Rd., Old Bedford Rd., Liberty St., Powder Mill Rd., Lang St., Commonwealth Ave., Maple St. and Bradford St. In addition to the CPW in-house efforts, full depth patching was included for Lowell Rd. in the sidewalk project bid.

3.4 Miles of Sidewalks Improved

Work for the 2010 sidewalk program contract extended into the 2011 construction season with the completion of the 1.7 miles of sidewalk extension on Lowell Road. In addition to the sidewalk extension work, additional sidewalk rehabilitations were added to the contract for the Old Marlboro Road/Harrington Ave. intersection and Pine St.

Within the roads and sidewalk programs, 59 curb ramps were reconstructed to meet current ADA regulations related to width, slopes, and surface.

Roads and Sidewalks in Sound Condition

The accompanying tables show that the condition of Town roads and sidewalk are located within the target range of 80-85 PCI (Pavement Condition Index) and SCI (Sidewalk Condition Index). The Town's overall investment in its road and sidewalk assets have resulted in cost effectively protecting and improving Concord's public way infrastructure for pedestrians and drivers while avoiding a multi-million dollar backlog to be paid by future residents of Concord.

ROAD CONDITION SUMMARY

	2011*	2010	2009	2008	2007
Pavement Condition Index					
(PCI) Network Average	80	82	81	83	84
(PCI) Arterial Collector Average	84	86	88		
(PCI) Local Road Average	78	79	75		
Recommended Repair(s)					
Rehabilitation	11%	8%	9%	12%	14%
Routine Maintenance	48%	48%	51%	52%	42%
No Maintenance Required	41%	44%	40%	36%	44%

*Includes 2011 Roads Program work to be completed by June 30, 2012

Note: The above referenced table is based on an infinite budget. Using FY2012 budget, the actual repairs breakdown is:
(Rehabilitation 2%, Maintenance 7%, No Work Performed 91%)

SIDEWALK CONDITION SUMMARY

Sidewalk Condition Index (SCI)	SCI Range	Miles	Percent
Replace	0-50	1.6	3%
Localized Repair	51-70	16.0	27%
Shows wear –routine maintenance	71-90	35.7	60%
Shows No Distresses	91-100	5.6	10%
TOTAL MILES		58.9	100%

Network Average (%)

Year	SCI
1999	80%
2011	81%
2010	75%
2009	76%
2008	76%
2007	77%

Other Road & Sidewalk Projects

The CPW Engineering Division worked with consultants to advance the design of the rehabilitation of the Monument St. retaining wall at Hutchins Farm. The design proposed the disassembling of the existing dry stack stone wall and reconstructing a new dry-look masonry stone wall in the same location. The existing wall stones will be utilized within the reconstruction.

The project was bid in September and awarded in November. Construction will begin in the spring of 2012 and extend into August of 2012, to limit disturbance to the Hutchins Farm fall harvest season. Limited traffic impacts are expected during installation of the excavations sheeting system to support Monument St. during construction. Two lanes of traffic are expected to be maintained throughout the construction duration.

Stormwater/Drainage

Concord is a "rivers community" with a stormwater/drainage infrastructure consisting of 200+ culverts, 315+ drainage outfalls, 3,700+ catch basins; 1,700+

manholes; and 50+ miles of drain lines. The Town is also responsible for three dams. CPW plans, coordinates and performs drainage improvements in conjunction with the Roads and Sidewalks Program to minimize disruptions and to eliminate expensive emergency repairs. Drainage maintenance activities are coordinated with the Division of Natural Resources and are performed under the general maintenance permit issued by the Natural Resources Commission. It should be noted that ditch maintenance and dredging operations, an important component in any comprehensive drainage program, are limited primarily due to logistical barriers (environmental and regulatory restrictions and cost). Nevertheless, routine maintenance activities are carried out by CPW immediately around culverts and outfalls via a general maintenance permit issued by the Natural Resources Commission.

The sum of \$205,000 was appropriated to continue the multi-year effort to improve the condition of the Town's stormwater system. In addition to infrastructure maintenance and repairs, drainage program funds are also used to meet the requirements of the Town's National Pollution Discharge Elimination System (NPDES) Phase II General Permit issued by the Environmental Protection Agency (EPA).

In 2002 and 2003 the Town performed a Drainage System Inventory and integrated the data into the Town's geographical information system (GIS). This inventory provided the basis for the development of the Town's 20-year Stormwater/Drainage Management Plan. This Plan is intended to provide a cost-effective framework for the upgrade and repair of the Town's stormwater/drainage system and to prevent expensive emergency repairs from occurring in the future through a planned and scheduled maintenance and replacement program.

The CPW Stormwater Team continues to inventory and assess the locations and condition of Concord's Stormwater/Drainage infrastructure. The Engineering Division completed a Townwide culvert inventory and condition assessment to further the development of the drainage GIS layer. The project collected condition data and developed a rating system to prioritize future use of capital drainage funds for culvert reconstructions. In addition, the project collected town-wide elevation data which will be used in future hydraulic models.

Drainage system repairs/improvements are completed by CPW's Highway Division, incorporated into the Roads Program design or bid as a stand-alone project, based on the project scope. All updated and collected data are used in reprioritizing the replacement projects.

The Engineering Division designed and permitted in-house the replacement of the drainage collection system on Derby St., a culvert replacement on Fitchburg Turnpike and the replacement of the Fairyland Pond outlet within the Town Forest. Additionally, drainage repairs on Fielding St. and Thoreau St. were included within the Roads Program contract with repairs of the Lowell Road drainage collection system being incorporated into the existing Sidewalk Program contract.

The Engineering Division also received word that the Massachusetts Emergency Management Agency (MEMA) recommended approval of the Spencer Brook Culvert at Westford Rd. Hazard Mitigation Grant Program (HMGP) application. The application requested \$69,000 in federal funds to supplement the Drainage Program funds required to repair the culvert. FEMA's decision is expected in 2012, and construction should begin within the summer of 2012.

NPDES Permit

As outlined above, the work related to the Town's compliance with the NPDES Phase II General Permit is funded and coordinated through the Drainage Program. The permit, issued by the Environmental Protection Agency (EPA) in August 2003, requires towns to meet multiple objectives called "minimum control measures" to improve water quality with the Commonwealth including public outreach, drainage system mapping, illicit discharge/detection and elimination (IDDE), construction sediment control and site plan project review. The EPA issued a draft permit in FY2012 for the Interstate, Merrimack and South Coastal (IMS) Watershed NPDES MS4 Permit. Concord will be required to seek coverage under the new IMS NPDES permit. The Division attended EPA's public hearings and informational sessions in 2011 and provided comments on the new permits contents. The new IMS NPDES permit will build on the 2003 permit's requirements and minimum control measures, but is expected to include increased sampling and testing requirements for outfalls, increased project review requirements, development

of outfall catchment delineations, in addition to other new requirements.

In 2011, the Division also completed the Year 8 annual reporting to the EPA for the 2003 permit. Major accomplishments within permit Year 8 included the completion of outfall screening, sampling and testing for all waters impaired for bacteria as well as the development as well as the development and adoption of the Town of Concord Stormwater Regulations and Concord Public Works Design and Construction Standards and Details. The Engineering Division also continued coordination of drainage structure inspection with the annual catch basin cleaning program. CPW Highway and Engineering Division members accompany catch basin cleaning crews and utilize a mobile device which is integrated with the Town's GIS system. The structures are inspected for overall condition and IDDE indicators. The collected data are then utilized by the Highway and Engineering Divisions in prioritizing future repairs.

Bridges

The Engineering Division is responsible for the management and monitoring of the 5 Town-owned bridges: Heath's Bridge (Sudbury Rd.), Pine Street Bridge (Pine St.), Flint's Bridge (Monument St.), Hurd's/Nashawtuc Bridge (Nashawtuc Rd.) and Pail Factory Bridge (Commonwealth Ave). Bridge inspections are completed every two years by MassDOT bridge staff and forwarded to the Engineering Division office for inclusion in Town records and to prioritize any needed repairs. Inspections are completed to evaluate the structural condition of bridge components as well as underwater stability/erosion issues and to meet National Bridge Inspection Standards. When required, bridge rehabilitation project scopes are developed and managed by the Division. Bridge repair funding comes from a variety of sources including: Chapter 90 State aid, local funding, State accelerated bridge program, etc.)

The Division received inspection reports for Flint's Bridge and Heath's Bridge. MassDOT has determined the maximum load posting for the Pail Factory Bridge on Commonwealth Ave. of type "H" (2 axles) - 13 tons; type "3" (3 axles) - 19 tons; type "3S2" (5 axles) - 27 tons. CPW received notification in January of 2010 and continued to pursue repair funding options in 2011.

Geographic Information System (GIS)

The Town's GIS Program is housed within the Engineering Division. The GIS Program Coordinator manages the system and data for the use of all Town staff and the general public, including various public and staff WebGIS internet mapping sites. The GIS Program continued to focus on improving the Town's drainage system data layers. This work included an in-house data collection initiative to correct and update drainage structure elevations and inspection information for 4 watersheds within the Town. Additionally, a Town-wide culvert inventory was completed. The culvert inventory collected structural conditions and provided a rating system to assist CPW in prioritizing future culvert rehabilitation and reconstruction projects.

Also undertaken was a new GIS Program needs assessment and strategic plan project that will help identify and prioritize future GIS projects Town-wide, and assist Concord's GIS Program for the next several years. Draft outlines of the assessment and benchmarking tasks were provided. The project will be completed in the winter of 2012.

CPW also began an RFP development and procurement for a Townwide sign inventory. The project will develop a comprehensive GIS sign layer which will allow CPW-Highway Division to manage the replacement of signs and document and meet new federal sign reflectivity guidelines. Bids were received at the end of 2011 and the project is expected to be awarded in early 2012 and completed by the summer of 2012.

HIGHWAY, GROUNDS, & CEMETERY DIVISION

Dickinson Fowler,
Highway & Grounds Superintendent

The Concord Public Works, Highway and Grounds Division maintains approximately 107 miles of public streets along with the associated drainage systems consisting of almost 50 miles of drain lines, over 3,700 catch basins, 200+ culverts, 1,700 drainage manholes and 315 outfalls. In addition, the Highway and Grounds Division maintains 59 miles of sidewalks, 2,793 signs, over 90 pieces of CPW vehicles and equipment, and manages the compost facility. It is responsible for 82 acres of public parks and grounds including 50 acres of

active recreation areas (10 athletic fields). The Division maintains all public shade and park trees, under the direction of the Park and Tree Supervisor who is also the Town's Tree Warden.

Snow Removal Program/Storm Damage

The 2011 season saw a large volume of activity for the Department's winter maintenance personnel, including the ongoing use of salt and sand as well as brine to keep the roads and sidewalks safe and passable. There were 8 storm events requiring full mobilization of forces involving town staff and plowing contractors while the entire winter maintenance season included 40 events requiring a response for snow and ice maintenance. There were no events that required a full snow removal in the Town centers with all removals throughout the season handled by Highway and Grounds forces only. The largest storm occurred on January 12 with 17 inches of snow falling in Concord with a region-wide storm declaration for this event that allowed for FEMA reimbursement. The issue for the 2011 winter season was the continuation of snow accumulation through January, February and March which caused a tremendous amount of road widening attention. This was accomplished utilizing Town forces as well as contractors. Additionally all CPW roofs had to be cleared of heavy deep snow to prevent roof damage. The fall of 2011 offered only one snow storm delivering 5 inches of wet snow. However, this storm occurred over the Halloween weekend with all trees still full of leaves. Town-wide cleanup of all downed trees and limbs involved all Highway and Grounds staff for a three-week period. An emergency declaration was designated for this storm allowing anticipated FEMA reimbursement for this emergency debris removal.

Roads and Sidewalk Maintenance

The Highway Division manages the contracts for several major maintenance programs including catch basin cleaning as well as pavement preservation strategies such as infra-red patching. Highway crews reclaimed several sections of roadway with full-depth patches of distressed pavement in preparation for certain 2011-12 road projects. Roads and areas which received this treatment included the Compost Site, Rte. 117, Sudbury Rd., Barrett's Mill Rd., Old Bedford Rd., Bedford St., Musketaquid Rd., Cambridge Turnpike, Wright Rd., and Old Marlboro Rd. A portion of Westford Rd.

damaged during the spring floods of 2010 was repaired which allowed this road to reopen in May.

In addition to the typical duties of road repair and maintenance, sign repair/ replacement, roadside brush cutting and street sweeping, the Highway and Grounds Division carried out sidewalk maintenance work which included the replacement of the sidewalk in front of the Art Association on Lexington Rd. A number of other smaller repair projects were completed in cooperation with Concord Municipal Light Plant, Water and Sewer Division of CPW and the Natural Resources Division.



Jeff Koranda works to replace the Fairyland Culvert.

Drainage

Three Town-engineered major drainage projects were completed using Highway forces including Derby St., which required numerous catch basins, manhole replacements/additions, and new drainage lines. Head-wall repair/replacement, pipe installation and dewatering on two additional drainage projects at Fairyland and Route 117 were also accomplished. In addition to these major projects, repairs and replacements were carried out on drainage structures on Baker Ave. Extension, Powder Mill Rd., Monument St., Barretts Mill Rd., Musketaquid Rd., Bedford St., and Domino Drive. Catch basin cleaning was not accomplished in East Concord in 2011 but will be completed in the spring of 2012 utilizing new equipment operated by Highway staff.

Parks and Playgrounds

The Park & Tree crews maintain almost 50 acres of athletic fields for use by the baseball, softball, soccer, lacrosse and other programs. Emerson, Rideout, Ripley,

Concord Carlisle Regional High School (CCRHS) turf and artificial fields and Sanborn playgrounds are heavily used from spring through the fall and receive the most attention with regard to mowing, raking, line painting, cleaning, seeding and fertilizing, etc. Sprinkler systems located at these locations received regular maintenance. As time allowed the Highway and Grounds Division provided support with maintenance of various conservation areas, as well as the community gardens, the Visitor's Center, the hanging plant program in West Concord, numerous gateway traffic islands and areas of public access in the business districts. Park and Tree staff participated in numerous special projects including the construction of temporary skating rinks at Emerson Field and Ride Out Field, installation of bike racks at numerous locations, and the installation of paver stones completing the beautification of the roadway medians at Belknap/Thoreau streets as well as Baker Ave. in West Concord.

Trees

Concord Public Works planted a total of 105+ public shade and park trees. All shade trees were planted in accordance with the Division's policy of "the right tree in the right place", and included many trees planted on private property as public shade trees, in accordance with the shade tree setback planting policy. Along with the new plantings, the Park & Tree crews pruned 35+ trees and took down another 150+ trees that had been damaged or were in hazardous condition jeopardizing public safety and Town infrastructure. Trees continued to be pruned, removed and maintained at Sleepy Hollow Cemetery. Park and Tree staff cleaned all debris from roadways and right-of-ways following Hurricane Irene in late August with Concord escaping any major damage.

The "public shade tree protection policy" continues to be shared with the public, contractors and Town Departments. The Division's goal remains to replace at least one public shade tree for every public shade tree that is removed or dies.

Cemetery

In addition to routine maintenance, mowing and burial activities, the Cemetery Division staff worked on numerous projects and provided contractor oversight on other projects. This included the installation of new

guardrails at Authors Ridge Parking Lot, wall repair on Front Hill and Author's Ridge, removal of unused headstones from long term storage, roadway patching and the installation of restored fencing at the Monroe grave site.

The Melvin Memorial continued to be monitored daily with maintenance activities performed including annual review and treatment of the slate tablets and rifle inserts. The Community Preservation Committee approved funding for the project replacing chain link fence at Sleepy Hollow. A final vote will take place in the, 2012 Annual Town Meeting. If approved the project will proceed after July 1, 2012,

In the tenth year of a multi-phase monument restoration program in the older cemeteries, preservation consultants continued their fourth year of assessment and physical conservation efforts at Old Hill Cemetery in Concord Center restoring a pre-set number of headstones and gravesites.

RECYCLING AND WASTE MANAGEMENT DIVISION

Rod Robison,
Environmental Services Program Administrator

Curbside Collection, Disposal, and Processing

The municipal curbside collection program provided trash and recycling services to 3,468 households. Subscribers to the municipal curbside collection program set out 1,186 tons of mixed paper, 594 tons of commingled containers, and 2,483 tons of trash for collection. The average household that subscribes to the Town program recycled 0.51 tons of materials and threw away 0.72 tons of trash.

Curbside Recycling Rate

Residents using Concord's municipal curbside collection program recycled 42% 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, April through November. It also does not include the tons of materials collected for recycling at the semi-annual DropOff-SwapOff days 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.

SUBSCRIBERS (AS OF JUNE 30)				
Year	Number of Subscribers	Recyclables tons collected	Trash tons collected	Recycling Rate
FY98	2,518	1,264	2,351	35%
FY11	3,468	1,780	2,483	42%
FY10	3,407	1,810	2,426	43%
FY09	3,323	1,864	2,387	44%
FY08	3,305	2,025	2,467	45%
FY07	3,184	1,982	2,559	44%
FY06	3,224	1,986	2,552	44%

(FY = July 1 through June 30)

Recycling Savings Exceed \$1.7 M

The curbside program received revenue of \$30,325 for paper and avoided \$91,915 in disposal costs by not disposing of paper as trash. Since 1998, when the Town began receiving revenue for recycled paper, recycled paper revenue has totaled \$450,927 and avoided disposal costs have totaled \$1,306,483 for an overall savings of \$1,757,410. The Municipal Collection Program received an average of \$25.56 per ton for recycled paper collected at the curb.

Year	Disposal cost	Paper revenue	Avoided disposal cost
FY98	\$110,564	(\$8,061)	\$38,798
FY11	\$191,191	\$30,325	\$91,915
FY10	\$186,786	\$20,220	\$93,247
FY09	\$194,254	\$25,833	\$93,282
FY08	\$194,254	\$58,188	\$116,818
FY07	\$195,783	\$35,302	\$119,898
FY06	\$187,549	\$31,889	\$113,107

(FY = July 1 through June 30)

Waste Management Contract

The Town's contract for the curbside program is effective through 6/30/13. In the months ahead, CPW will begin to evaluate procurement options for a new solid waste & recycling contract to commence 7/1/13.

Reuse and Recycling DropOff & SwapOff Events Achieved Record Attendance

The Spring DropOff & SwapOff event on May 7 attracted 979 households. The Fall DropOff & SwapOff event on October 15 was also a great success with 891 households participating. Both events went smoothly, thanks to the volunteers that make these events possible.

DropOff SwapOff Participants

Year	May	October
1999	521	430
2011	979	891
2010	931	989
2009	889	981
2008	974	918
2007	908	840

Unwanted Medication & Sharps Collection / Grant

Unwanted medication & Sharps were collected at both 2011 DropOff events. The Town received a donation in the amount of \$500 from Emerson Hospital for the unwanted medication & Sharps collection. Twelve boxes of unwanted medication and five boxes of Sharps were collected between the two events.

Hazardous Products Collection

Subscribers to the curbside collection program receive one free pass per year to the Minuteman Hazardous Products Regional Facility in Lexington, where they can dispose of hazardous waste. The facility is open one weekend day a month from April – November. Seventy-five curbside subscribers visited the site in 2011, along with seven non-curbside subscribers who paid the vendor directly.



Enthusiastic Volunteers at DropOff SwapOff Day

Composting Site Turns Yard Waste into Garden Gold

From April through December, residents made more than 5,700 visits to the Compost Site, dropping off leaves, grass clippings and brush, while 279 residents dropped off paint at the paint shed and 156 residents picked up paint. At the Compost Site, 1,130 Christmas

trees were recycled and 130 bags of Styrofoam were collected for recycling.

Keeping Mercury Out Of The Environment

Concord Public Works collected 8,968 linear feet of fluorescent light bulbs and 281 lbs. of nickel cadmium, lithium, and lead acid batteries from residents and municipal facilities, for recycling and proper disposal. This is in addition to 49,880 lbs. of computers, TV’s, and other electronics that were collected at the two DropOff events. Another 4,700 linear feet of fluorescent bulbs and 18,277 lbs. of computers and electronics were collected from businesses at the 2 business recycling events.

VISITS TO THE COMPOSTING SITE

Year	Leaves & grass	Brush	Paint Drop-off	Paint Pickup
2003	5,825	334	138	90
2011	5,106	650	279	156
2010	6,470	587	252	156
2009	6,723	667	210	145
2008	8,093	508	222	138
2007	7,880	697	296	171
2006	6,651	615	298	158

Annual Right-To-Know & Hazardous Waste training

Annual Right-To-Know & Hazardous Waste training was conducted for CPW employees. The RTK training is required by the Mass. Division of Occupational Safety (DOS), and Hazardous Waste training is mandated by the EPA and MA DEP.

SPCC Training

Annual SPCC (Spill Prevention Control & Countermeasure) training was conducted for the CPW Highway and Water & Sewer crews. The training covered oil spill prevention and countermeasure protocol, including a review of CPW’s SPCC plan. This annual training is required by the EPA.

DEP Sustainable Materials Recovery Program Grant

CPW submitted a grant application and was awarded a “reimbursement” grant in the sum of \$1,250 for the purchase of seven new wire-frame recycling bins, under the DEP’s Sustainable Materials Recovery Grant Program

WATER AND SEWER DIVISION

Alan Cathcart,
Superintendent

In 1974 and 1976, Annual Town Meeting established separate Water and Sewer Enterprise Funds, to ensure that the operation, maintenance and capital improvement of the water and sewer systems would be financially viable. Expenses incurred for each system are covered entirely by revenues generated by the enterprise. The Water and Sewer Division of Concord Public Works (CPW) is responsible for managing the day-to-day operations of the water and sewer infrastructure and as of 2010, the total assets for each system are 18.5 million and 25.5 million dollars, respectively

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 grown to include both groundwater and surface water sources, a total of seven pumping stations, two treatment facilities, and a high pressure water main network consisting of over 130 miles of pipe. Two covered storage reservoirs, one located at Annursnac Hill and the other located at Pine Hill in Lincoln provide total reserve capacity of 7.5 million gallons. There are presently 5,491 customers receiving potable water service and fire protection from this supply. This represents approximately 95% of Concord residents and businesses, together with a small number of Acton properties along Route 2A.

Water Use and Demand Management

The total water production used to meet residential, commercial, institutional and municipal needs during 2011 was approximately 684 million gallons with an average daily demand of 1.98 million gallons. The peak day water demand occurred on July 22, registering 4.11 million gallons.

Residential customers with registered in-ground irrigation systems or having a record of historically large summer water use received a special notice in the spring informing them of the seasonally triggered Water Advisory. This advisory calls attention to seasonal conservation rate structure and encourages customers to follow

best management practices when performing outdoor lawn care. Despite these early warning efforts, on July 24, water demands reached the limit of available supply and the Public Works Commission was forced to issue a Declaration of the State of Water Conservation. In response to feedback received during such declarations in the past, staff developed a conservation “matrix” to better communicate and inform customers as to what each level of advisory meant. The first stage of this declaration was communicated via targeted door hangers, News and Notice Alert, a Code Red telephone alert and poster boards distributed at key locations throughout Town. Due in larger part to a kind and compassionate intervention of mother nature, in the form of rain, we were spared the need to elevate the Declaration to a point where water use violations were necessary.

Water Conservation Program Highlights

Concord’s Water Division offers a variety of programs to support and encourage wise water use. Offerings, partially funded with a grant provided by the MA DEP have once again included low flow toilet replacement rebates and high efficiency clothes washer rebates. The Division also hosted an annual rain barrel delivery and pick-up incentive, leveraging the power of collective purchasing, to reduce costs for each customer. These barrels provide supplemental water storage for what is considered to be one of the most basic and easy to implement approaches to localized “water re-use” -- harvesting rainwater. This year a new and improved wooden “whiskey” barrel design was especially well received.

In keeping with the broader Municipal Sustainable Concord Interests, grant funds were also used to furnish low flow, hands free automatic water faucets which will be installed in the public restrooms at the Town House. The installation of these units not only will provide an opportunity to conserve water but is in keeping with the Town’s goal to practice and promote sustainable practices.

In keeping with the broader Municipal Sustainable Concord Interests, grant funds were used to furnish low flow, hands free automatic water faucets in the public restrooms at the Town House. The installation of these units not only provided an opportunity to conserve water but is in keeping with the Town’s goal to practice and promote sustainable practices.

As always, Water Division customers are interested in learning more about what can be done to save water and money. Please visit the Town of Concord website (www.concordma.gov) and search for the Water and Sewer Division and water conservation programs. Additional information and opportunities can also be found through the Environmental Protection Agency’s national “watersense” initiative.

Water Quality

In accordance with Massachusetts Department of Environmental Protection regulations, all routine and non-routine water quality testing activities demonstrate that the drinking water provided to our customers satisfies State and Federal requirements imposed on public water systems. A summary of the water quality test results is available on the Town website and the Annual Water Quality Report is sent to every customer each spring.

As noted on the Environmental Protection Agency’s (EPA’s) web-site, “Lead and copper enter drinking water primarily through plumbing materials. Exposure to lead and copper may cause health problems ranging from stomach distress to brain damage. On June 7, 1991, EPA published a regulation to control lead and copper in drinking water. This regulation is known as the Lead and Copper Rule (also referred to as the LCR or 1991 Rule).



49 Gallon Whiskey Rain Barrells

The treatment technique for the rule requires systems to monitor drinking water at customer taps. If lead concentrations exceed an action level of 15 parts per billion (ppb) or copper concentrations exceed an action level of 1.3 ppm in more than 10% of customer taps sampled, the system must undertake a number of additional ac-

tions to control corrosion. If the action level for lead is exceeded, the system must also inform the public about steps they should take to protect their health and may have to replace lead service lines under their control.”

In accordance with an ongoing and pre-approved LCR sampling plan, Concord performed sampling of designated, reference sample sites located throughout our distribution system during the summer. Findings from these sampling activities once again reflected positively upon the quality and reliability of our existing water supply treatment systems, especially as it relates to corrosion control and impacts on private plumbing fixtures. Specifically, the 90% compliance values of 3.1 ppb for lead and 0.48 ppm for copper fall well below EPA’s action levels.

Reservoirs

Consultants provided technical support for the inspection of both the Pine Hill and Annursnac Hill Reservoirs. Each reservoir was drained, cleaned and inspected for the purpose of evaluating the structural integrity of each system and subsequent rehabilitation needs. Findings confirmed that the Annursnac Hill Reservoir has immediate and significant structural needs, most notably with respect to its existing flooring system. While the Pine Hill Reservoir was determined to be in generally good condition, several less immediate improvement recommendations were identified for consideration within the next five years.

Following the cleaning and inspection activities, the contractor furnished and installed new submersible mixing systems in both reservoirs. The effectiveness of each mixing system was field-validated over several months via in-house sampling efforts (using chlorine residual) and confirmed with temperature probe data. The introduction of these new state-of-the-art water mixing systems represents a notable and significant improvement in water quality control measures within our distribution system.

Pumping Station Rehabilitation and Upgrades

Ongoing maintenance and inspection of all seven water production facilities and related treatment systems continue to be performed on a daily basis. Operations personnel continue to make system improvements to comply with Chemical Control Safety regulations which became enforceable in 2010. Supervisory, con-

trol, and data acquisition system upgrades were also made at both the 135 Keyes Road and the Deaconess Treatment Facility sites for increased reliability and control at all existing facilities.

A sub-contractor rehabilitated a worn motor and pumping assembly at the Hugh Cargill wellfield. The rehabilitation activities included the cleaning, baking, dipping and testing of the motor and the complete replacement of the pumping assembly including the shaft, stuffing box, mechanical seal and motor bearings. While the facility was off-line, all ten 2-1/2-inch wells were cleaned and redeveloped. The yield from this well has been restored and the facility has been placed back on-line.

A construction contract was awarded to activate two existing replacement wells located at the White Pond well site. The replacement wells were first installed in 1999 for the purpose of improving water quality from this source of supply. Due to cost benefit considerations, the activation of these wells had been deferred. The activation of these wells was recently authorized in an attempt to restore the water withdrawal capacity from this site to its full “registered” volume of 550 gpm. The work included the furnishing and installation of all mechanical, electrical and instrumentation needs. Two new submersible pumps were furnished and installed.

Design services were performed for the rehabilitation of an existing concrete dam, intake piping, spillway, and gate/control valves associated with Nagog Pond water supply. In response to a Notice of Noncompliance issued by DEP for the Town’s failure “to maintain the intake of Nagog Pond source”, the Water Division is preparing a scope of work for additional inspection services required for the Nagog Pond intake pipe. This work is expected to include the use of specialized divers for a preliminary inspection of the external portion of the intake pipe (including the actual intake itself), which is expected to help define a more detailed scope of work required to complete a more detailed inspection effort which will then lead to a report identifying long-term rehabilitation/replacement needs.

Nagog Pond continues to be operated under a filtration waiver due to a comprehensive Watershed Protection Program and the high quality of the water. Based

ANNUAL WATER REPORT SUMMARY TABLE

Water Statistics	2011	2010	2009	2008	2007
Miles of Main	130.9	130	130.22	129.75	129.55
Hydrants	1,270	1,263	1,262	1,250	1,248
Main Pipe - New (linear feet)	4,300	N/A	2,491	1,080	12,354
Main Pipe - Replaced or Rehabilitated (lf)	785	2,262	1,908	3,600	2,648
Number of Service Accounts	5,491	5,448	5,437	5,436	5,436
Total Water Demand (million gal.)	684	748	676	707	753
Daily Average Demand (million gal.)	1.98	2.12	1.85	1.93	2.06
Peak Day Demand (million gal.)	4.11	4.63	3.00	3.47	3.81
Annual Precipitation (inches)	57.63	54.81	50.75	63.74	38.57
Mean Annual Precipitation (inches)	42	42	42	42	41
Residential Rate per Unit (unit = 748 gal.)					
Base Rate- Step 1	\$4.10	\$3.96	\$3.83	\$3.72	\$3.61
Conservation Rate- Step 2 (5/1- 10/31)	\$8.20	\$7.76	\$7.51	\$7.06	\$6.71
Conservation Rate- Step 3 (5/1- 10/31)	\$10.25	\$9.90	\$9.58	\$9.28	\$8.83
General Service Rate per Unit of 748 gal.					
Step 1 - (<50 Units)	\$4.10	\$3.96	\$3.83	\$3.72	\$3.61
Step 2 - (>50 Units)	\$5.21	\$5.03	\$4.86	\$4.62	\$4.46

upon a re-evaluation of clearly established compliance monitoring activities, DEP and EPA have re-interpreted Concord's sampling and reporting protocols. This change is expected to significantly influence our ability to strategically manage the operation of this source, specifically if we intend to maintain the filtration waiver. Staff has begun to work with counsel and water supply engineers to evaluate alternatives and options available which could potentially reduce the cost burden associated with a very costly design and construction effort if filtration is mandated.

Regardless of the filtration waiver issue noted above, regulations promulgated by the United States Environmental Protection Agency, effective in 2013, will require the Town to provide additional protection against microbial contamination largely due to *Cryptosporidium* and *E.coli* in surface water supplies. In preparation for this new requirement, plans and specifications were finalized for the overhaul/replacement of the 60-year-old Rte. 2A Pump Station. In addition to the replacement of all mechanical, electrical and instrumentation systems, the upgrade includes the addition of a new UV disinfection system to comply with a federally issued Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). The contractor has already begun demolition activities.

Water Main Rehabilitation and Extension Programs

785 ft. of water main along Union and Fielding streets was replaced under the supervision of the Water Division and included renewal of water services to the edge of the public owned right-of-way. The work was coordi-

nated with the Concord Public Works Roads program and included drainage improvements within this same neighborhood.

4,300 ft. of new water main, required to serve a proposed 350 unit residential subdivision off Old Powder Mill Rd. in West Concord was installed. When complete, this service will provide for a new distribution interconnection between Forest Ridge Rd. and Border Rd.

As a part of the Water and Sewer Division's preventive maintenance program, a water main leak detection survey on approximately 50% of our water main distribution system was completed. This electronic leak detection technique has the ability to pin point very small water leaks that could otherwise go unnoticed for long periods of time.

In addition to routine inspection and winterization of the over 1,270 hydrants which are maintained and operational for water quality control and fire protection purposes, eight hydrants were replaced and seven new hydrants were added to the system. As part of a recall issued for American Flow - B84B hydrants manufactured between 1999 and 2003, hydrant rods were replaced in 11 hydrants. Historic flow and pressure data collected from hydrants located throughout our distribution system were reviewed by the Insurance Services Office (ISO) for the purpose of updating the Town's fire protection classification. These surveys directly impact property insurance premium calculation. A similar survey was completed in 2001.

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 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 at fields located adjacent to Great Meadows. Over the years, service needs and treatment goals have evolved resulting in a series of collection system expansion initiatives and treatment system improvements. The present sewer system serves over 1,823 customers (35% of the community) and consists of 33 miles of collector mains (gravity and low pressure), two pumping stations and six neighborhood lift stations.

No sooner had Concord been spared from an extended period of hot dry weather noted above than Hurricane Irene touched down. In anticipation of the significant threat of heavy rain and residual flooding, the Water/Sewer Division worked with the Board of Health to contact customers located in Concord Center, who have been historically prone to sewer collection system surcharges during extreme flooding events. While winds and rain were intense for a short period of time, we were fortunate that the duration of both were not significant enough to overwhelm the carrying capacity of our sewer collection system.

Pumping Station Rehabilitation and Removal

A construction contract was awarded for a sewer ejector station replacement project planned for Park Lane and Gifford Lane stations. The scope of work includes the installation of emergency bypass piping, demolition and removal of existing equipment, refurbishing and installation of cathodic protection of existing cans, and the furnishing and installation of new submersible pumps and associated mechanical, electrical and instrumentation systems. The installation of the bypass systems at both stations is complete.

Sewer Main Extension and Rehabilitation Programs

The Public Works Commission approved a request to extend the sewer main along a portion of Bedford St. terminating near 324 Bedford St. The need for this low pressure sewer main was previously identified in the

Comprehensive Wastewater Management Plan accepted at Town Meeting. 615 ft. of new low pressure sewer (PVC, SDR-21) main was installed under the existing sidewalk. The work included the use of trenchless technology for a lateral service to minimize construction disturbance within the Rte. 62 right-of-way.

In concert with the water main replacement project noted above, antiquated clay sewer pipe was replaced with PVC along Hubbard St., Willow St., Fielding St., and Union St. As part of this effort, new service cleanouts were installed at the property line for each private service connection.

Infiltration and Inflow Inspection and Rehabilitation

Concord Public Works has an ongoing program to investigate and eliminate infiltration and inflow (I/I) from the Town's sewer system. Inflow refers to rainwater that enters the sewer system via connections to storm drainage systems (e.g., catch basins, roof gutters, or sump pumps tied into sanitary sewer pipes). Infiltration refers to water which seeps into cracks or leaks in the sanitary sewer system. The goal of this program is to increase available capacity to serve the needs of our community while decreasing the amount of clear water unnecessarily treated at the municipal wastewater treatment plant.

A sewer collection system model that can be used to assist staff in prioritizing ongoing inflow/infiltration analysis and can be used to identify collection system carrying capacity constraints and needs was completed.

Wastewater Treatment Plant Operations and Facilities Improvements

Woodard & Curran, Inc. continued to operate the Town's Wastewater Treatment Plant (WWTP), located off of Bedford St., under the supervision of the Water and Sewer Division. The plant maintains excellent compliance with regulatory requirements, in accordance with State and federally issued permits. Water/Sewer Division System Maintainers continued to serve on a monthly work schedule rotation in support of day-to-day operations at the Wastewater Treatment Facility.

Notable maintenance and improvement activities performed at the WWTP over the past year include: the integration of a new facilities management software system (SEMS) to assist in asset management activities; the rehabilitation of secondary clarifier unit #1

and trickling filter unit #1 including the refurbishing (sandblasting/coating) of the mechanical system; the rehabilitation of 1 of 4 existing primary scum plunger pumps including the replacement of a piston; and replacement of dampeners on 2 existing sludge pumps.

The National Pollutant Discharge Elimination System Permit NPDES permit associated with Concord's WWTP is reviewed and reissued by the State and Federal government once every five years. The existing permit expired on March 13, 2011. While the renewal has been delayed, we have been informed that a draft permit may be issued with new limitations placed on targeted metals. In anticipation of this, staff has performed a series of full-scale dose response tests to gain a better understanding of how effluent metals concentration might change with a range of aluminum sulfate (alum) feed rates to the treatment process. Currently alum is used to coagulate and precipitate phosphorus out of the wastewater stream prior to discharge to the Concord River. As the cost of treatment is directly tied to these limits, and these limits may become more stringent over time, the final permit will be negotiated between impacted communities and the issuing authority (EPA and DEP).

Following a competitive bidding process, Woodard & Curran was awarded a new service contract for ongoing operation, maintenance, repair, and management of the facilities, and required laboratory testing in compliance with all legal and regulatory requirements, as well as participation in improvements for the enlargement of the plant or regulatory compliance, and renewal of

processes or additions of equipment. The term for this new contract is a 4-year minimum, with opportunities for two year extensions up to 10 years. Woodard & Curran has provided high quality service in this capacity and their ongoing support is welcomed.

Wastewater Planning

Long-range wastewater planning interests have continued to maintain a high level of interest within the community. The Wastewater Planning Task Force, formed at the request of the Board of Selectmen, presented Article 41 "Wastewater Planning Capacity Study" at the 2009 Annual Town Meeting. A resolution of support for this article was received favorably, allowing for an evaluation of wastewater treatment and capacity management alternatives to be investigated to accommodate wastewater flows above and beyond those flows necessary to meet existing requirements and obligations resulting from development and re-development under current zoning.

A consultant has continued to perform technical support services required to develop a Wastewater Capacity Alternatives Analysis. Efforts to date include the completion of a wastewater management alternatives evaluation matrix and the beginning of a detailed hydro-geological evaluation for a large scale groundwater discharge site which could potentially be located near the Wastewater Treatment Plant. While it is recognized that the loading capacity of such a groundwater discharge site will not address all identified expansion needs captured within the long-range wastewater management plan, it represents an important step forward.

ANNUAL SEWER REPORT SUMMARY TABLE

Sewer Statistics	2011	2010	2009	2008	2007
<u>Assabet Pumping Station</u>					
Total Pumped (million gal.)	89.48	96.06	87.92	98.44	84.06
Monthly Average (million gal.)	7.46	8.00	7.33	8.2	7.01
Daily Average (million gal.)	0.24	0.26	0.24	0.27	0.23
<u>Lowell Road Pumping Station</u>					
Total Pumped (million gal.)	352.89	363.48	340.88	387.80	311.44
Monthly Average (million gal.)	29.41	30.29	28.41	32.32	25.95
Daily Average (million gal.)	0.97	1.00	0.93	1.06	0.85
<u>Collection System</u>					
Number of Service Accounts	1,823	1,811	1,804	1,780	1,772
Miles of Sewer Main	33.74	33.36	33.36	33.36	33.36
Main Pipe Inspected (lf.)	1478	2,257	11,123	6,340	5,487
Main Pipe Replaced/Rehabilitated (lf.)	1,194	0	832	0	2,720
Rate per Unit (unit = 748 gal.)	\$9.20	\$8.76	\$8.35	\$7.95	\$7.57