SAVING WATER PARTNERSHIP
Make a difference. Use water wisely.

NEW Classroom Presentations about Water Conservation for K-12 Students!

The Saving Water Partnership (of which North City Water District is a member) has teamed up with Nature Vision to offer free, interactive, hands-on, inquiry-based classroom presentations about water conservation to K-12 schools in the greater Seattle service area.

Each program supports Washington state K-12 Learning Standards and STEM Education, and is available remotely, either using pre-recorded videos followed by a live video call for Q&A, or as a live video, or they can be taught in person—all depending on the school's policies and preferences. Either way, the goal of these presentations is to help students discover a personal connection to environmental issues.

Class examples include (each topic adjusted to match student age / grade level):

– The Water Cycle
- Soil Science / Healthy Soil Saves Water
– The Salmon Cycle
– Will There Be Enough Water?
– Water Conservation Town Hall

Nature Vision is an environmental education non-profit organization that brings place-based, experiential nature programming directly to schools and local green spaces, with over 70,000 Pre-K through 12th grade students served each year in King and Snohomish Counties. Their goal is to ensure all students receive quality nature connections where they need them the most. Learn more on their website at naturevision.org.

Say Hello to Zach!

Our new Utility Person Level I

From his time spent working as mechanic, and helping customers at Dunn Lumber, to installing fire sprinkler systems with all of their related pipes and fittings, Zach had the right foundation we were looking for in an entry level Utility Crew member. Add in his love of working on both small and large mechanical equipment, and he was more than ready to embark on a new water utility career!

The fact that the job is never boring is an added plus for Zach: a typical day may have him doing water meter re-reads or final meter reads for customers moving out; going to customers' homes to ascertain possible leaks; finding and marking the location of underground water mains and services to make sure nearby construction crews don't damage our pipes; deactivating and reactivating radios to make sure they communicate properly to the tower; and general upkeep around our Maintenance Facility, including washing trucks, cleaning the building, and watering the landscape.

Special talents we've already come to appreciate are Zach's positive working attitude, his ability to think out of the box to solve problems, and a gift for thoughtful communication and interaction with our customers.

When he's not on the job, his first love is golf... followed closely by outdoor barbecuing, camping, fishing, jet skiing, and boating with friends. Welcome aboard Zach, we're thrilled to have you!

Community Corner

FREE Savvy Gardener Class: Fall and Winter Chores for Easy Spring Gardening
Thursday, Sept. 22, 6:30 – 8:00 pm
Online with North City Water District
Register by calling (206) 362-8100 or email community@northcitywater.org

Meet Us at the LFP Farmer's Market
In Lake Forest Park Center
Sunday Sept. 11, 10:00 am - 2:00 pm

The North City Waves Newsletter is brought to you by North City Water District, and its Board of Commissioners:
Patricia Hale (President), Ron Ricker (Vice President), and Charlotte Haines (Secretary).
Feel free to contact us at PO Box 55367, or 1519 NE 177th Street, Shoreline, WA 98155.
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North City WATER DISTRICT
90 YEARS • 1931–2021

NORTH CITY WAVES

Issue 3: July • August • September 2022

A newsletter for water-related issues and info
Serving the communities of Shoreline and Lake Forest Park since 1931

From Our President...

by Patricia Hale, Board President

This has been another very busy summer for us here at North City Water District. Our crews have spent considerable time moving and/or raising valves along 5th Avenue NE in preparation for the City's contractor, who's installing sidewalks on both sides of the street between NE 175th Street and NE 182nd Court, as well as the associated water utility work surrounding the new Light Rail Stations. In both cases, we've done some of the work at night to minimize the disruption of streets closed for construction. Summer is also the time of year that businesses and individuals with backflow devices are required to turn in their annual test reports, so staff have been coordinating those tasks as well. A little closer to home, we just completed the remaining vehicle bays at our new Maintenance Facility, which keeps the rain off our backhoes to help extend their life cycle, and initiated the design of several capital projects slated for next summers' construction season. It was an absolute delight to finally be able to talk with our customers in person at Celebrate Shoreline on August 20; we look forward to another opportunity at the Lake Forest Park Farmer's Market on September 11. Are you signed up for our final free gardening class of the year on September 22? There's still time!

Just one of many new valves being installed at the Sound Transit project locations

Inside This Issue

Three Ways to Stay in Touch

1) Join www.nextdoor.com for neighborhood news and notices
2) Follow us on www.Facebook.com/NorthCityWaterDistrict
3) Sign up for news, alerts, free classes and more on our website at www.northcitywater.org

North City Waves Newsletter ~ a publication by North City Water District

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Development is Booming in North City...

and North City Water District is Rising to the Challenge!

For those of you who've been able to follow the stories chronicling our District's 90 year history (both in this newsletter and on our blog), you've already got a sense about how we've approached the challenges of our area's growth over the years—from a philosophical as well as operational stance.

For those of you who haven't had a chance to read those accounts, we can sum it up for you in two words: proactive planning.

This mantra has served us well, considering the very same special purpose water district formed by local citizens in 1931 to accommodate an estimated 150 water service accounts is now servicing nearly 8200 accounts in 2022.

Back then, our original 42 miles of water mains (those large underground distribution pipes that bring water to your neighborhood) were sized at an average of 2-3 inches in diameter, which by the standards in those days, was more than adequate to meet average daily water demand, and still proactive enough to address foreseeable growth.

And grow we did... in the 1960s, when our customer base was pushing 5000, and those original pipes were reaching the end of their life cycle with nearly 25% water loss due to leaks, our Board of Commissioners made yet another proactive decision.

Not only did they opt to replace the majority of our water mains (versus only those with the worst leaks), they decided to upsize nearly all of the new mains to 6 inches (or more) in diameter. Doing this would accommodate current ***and*** projected growth ***and*** improve water flow during emergency usage with a "Fire Flow of 500 gallons per minute."

This proactive decision enabled us to meet another 50+ years of growth... during which Fire Flow requirements and standards have continued to evolve.

The latest International Fire Code now requires that Fire Flows for new construction are at a minimum of 1500 gallons per minute, for two full hours—regardless of the building type (residential or commercial) being served. However as buildings get larger, both the volume of water and the length of time the water has to flow varies, depending on the building type. Once again we're taking the proactive approach by increasing the average pipe diameter throughout our entire system to 7.7 inches (across nearly double the number of water main miles we had in the 1960s).

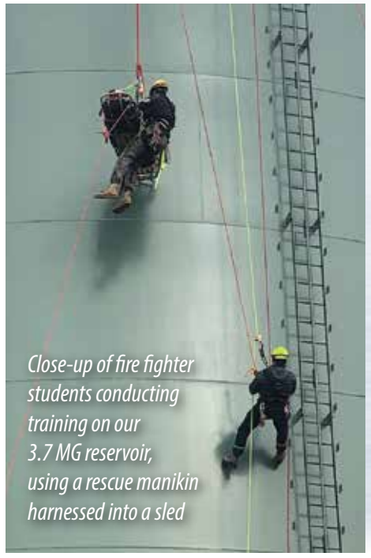
We're taking this approach because so many single family residences in our area are being replaced by middle residences (duplexes, townhomes, smaller apartment/condo complexes), and large apartment complexes, especially surrounding light rail stations and along major arterials. Larger complexes require the larger water mains to accommodate higher Fire Flows. Our goal is to stay ahead of that curve with adequate water pressure, should the Fire Department ever need to put out a fire anywhere within our service area.

So why don't we just install larger diameter water mains everywhere? Because Fire Flow is not just about having the largest possible pipe diameter. Much like your body's blood pressure, our water system is carefully pressurized. Water moves through smaller pipes more rapidly / with more pressure; larger pipes everywhere would lower the pressure, and also result in water that was not as fresh or ideal to drink.

Water Districts and Fire Departments Are Key to New Developments

In addition to adequate Fire Flow, water utilities and fire departments must work closely together to ensure other aspects of public safety for new developments. Hydrants and valves must be strategically located to enable ready access and optimum water pressure to new developments. Once installed, our crews regularly and routinely maintain, flush and adjust hydrants and valves to make sure firemen can connect to a hydrant any time, day or night, and have adequate water pressure using less than 300 feet of hose.

continued



Close-up of fire fighter students conducting training on our 3.7 MG reservoir, using a rescue manikin harnessed into a sled

Hydraulic Modeling is Key to Addressing New Development

Back in the early 1980s, we developed a comprehensive computerized hydraulic model of our entire water system. This system tracked everything from pipe information (length, diameter, material type, age), ground elevations across our service area (hills and gravity have an impact on water pressure), and water usage patterns at different locations, to all of the operating information at our Pumping Station.

In addition to a specialized consultant who routinely tests the hydraulic system for accuracy, our staff also performs regular cross-checks by measuring Fire Flows at different hydrants throughout our system—usually late at night, when water usage is minimal—all while a member of our staff oversees the data from our Pump Station.

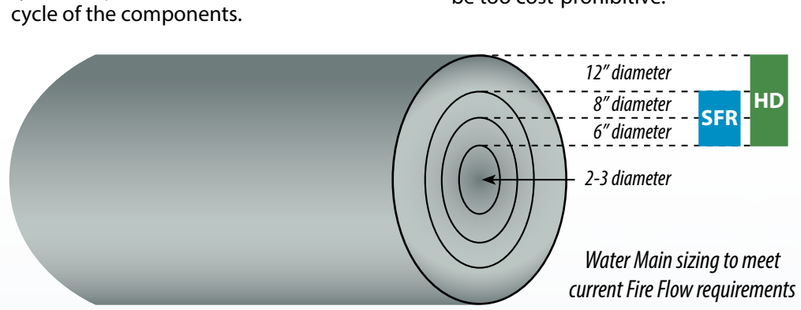
Having a comprehensive hydraulic model enables us to analyze, predict, and proactively address development impacts to the water system, which likewise helps us make more informed decisions about system improvements that maximize the life cycle of the components.

Having a comprehensive hydraulic model also enables us to stay on top of Fire Flow requirements for our area's booming development. Each new permit application for a new development, or a residential expansion greater than 200 square feet requires us to run a hydraulic model to assess available Fire Flow at the property.

If the results of the hydraulic model show adequate Fire Flow availability to meet current code, then the District issues a Certificate of Water Availability to the developer / homeowner and the Fire Department.

If Fire Flow to the proposed development is not adequate, the Fire Department will work with the property owner to recommend specific improvements (such as changing the building material type).

Occasionally, the development may come to a halt if the developer or homeowner finds the cost of Fire Flow modifications to be too cost-prohibitive.



Water Main sizing to meet current Fire Flow requirements

■ **Single Family Residential (SFR) Customers** need either 6 inch looped* or 8 inch water mains in order to provide 1,500 gallons per minute of fire flow for 2 hours.

■ **High Density (HD) Customers** include businesses, institutions, big apartment or condominium complexes, and other large developments, all of which require 12 inch water mains in order to provide 3,500 gallons per minute of Fire Flow for 3 hours.

*Much like a spider web, which is more sound when it's connected in multiple locations, the network of residential water mains must be carefully planned to accommodate smaller residences while still providing adequate water to nearby higher density developments. "Looping" refers to water mains that are connected to / shared by / provide water to both residential and high density customers. If it wasn't for fire flow requirements, a 2-3 inch pipe could likely provide all of the water that most customers need for personal consumption.

Many thanks to Shoreline and Northshore Fire Departments for our excellent working relationships. We love collaborating and supporting each other to ensure everyone in our service area has a water system they can count on in the event of an emergency!