FERGUSON WATERWORKS

Request for Proposal (RFP) Submittal

Trabuco Canyon Water District

AMR/AMI System Implementation

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SECTION 1

INTRODUCTORY LETTER

1. INTRODUCTORY LETTER

September 8, 2021

Attn: Michael Perea, Assistant General Manager
Trabuco Canyon Water District
32003 Dove Canyon Drive
Trabuco Canyon, California 92679

Subject: Request for Proposal for AMR/AMI System Implementation and Contract Services

Dear Michael -

OVERVIEW

Thank you for the opportunity to submit the accompanying proposal for Trabuco Canyon Water District's Automatic Meter Reading/Automatic Meter Infrastructure System Implementation project. Ferguson Waterworks, Meter and Automation Group (MAG) is uniquely qualified with many distinct advantages for the District, operating as both a Neptune Level 1 distributor in select areas of the United States, and as a meter systems and proven water meter installation contractor nationwide. We have a rich history in both arenas, having been a stocking Neptune distributor since 1975, and a meter/radio installation contractor since 2001 including the installation of over 1 million meters and endpoints. Ferguson Waterworks is registered with the State of California's Department of Industrial Relations PW-LR-1000401934. We also hold a valid State of California Class A, C-36, and D34 license #1059063. Ferguson/Neptune has a proven track record of successful AMI and AMR projects including meter and radio installations and we are confident you will find **Ferguson Waterworks** well qualified to design and implement your AMR/AMI Program.

For your project, our Ferguson team is partnering with Neptune Technology Group, and our California based Ferguson team will manage the project, implementation, and provide all technical assistance and support of the program. Our Santa Ana branch office would be your local source of contact. For the installation of these materials, we will be using Ferguson's highly skilled and experienced installation team. You will also be provided with ongoing training on the system in addition to continued support after the completion of the project. Furthermore, it is our duty to ensure that our relationship with Trabuco Canyon does not end after meters are sold and installed. We see the deployment of a Neptune metering system as a long-term partnership that we are excited to begin with Trabuco Canyon Water District.

ADVANTAGES FOR TRABUCO CANYON

- **Existing relationship between Ferguson/Neptune & TCWD** – Our team has an in-depth knowledge of Trabuco Canyon Water District's needs & service territories.
- **Save Time and Money** – Leverage your 1,106 existing R900i radios provided by Ferguson/Neptune.
- **No Wires, No Splicing, No Connectors** – The R900i integrated register and radio eliminates a huge point of failure, troubleshooting, installation time and expense, and adds the benefits of a single vendor for maintenance.

- **No Foreign Made Products** – All Neptune meters and products are made in the USA.
- **Local and reliable Sales and Support Staff** – The district will be promptly taken care of for any issues that may arise.

IN CONCLUSION,

Though some manufactures may wave a low-cost solution in front of you, a quick Google search can bring to light some of the massive failures and future costs that your utility could once again be setting themselves up for. A partnership with Ferguson and Neptune will eliminate the headache that usually accompanies a meter change out program. We aim to save you from the performance pitfalls, disadvantages, and time-consuming hidden costs that an unsuccessful project with a different contractor could cost you.

Neptune is the North American market share leader in meter sales and boasts more than 2,800 active AMR/AMI systems in use today, while Ferguson boasts larger annual revenue than the top 5 meter and automation manufactures combined. Behind our success, we are an organization committed to partnership, the highest quality risk-free products, and a proven record of performance as detailed in the pages ahead. In the end, Ferguson's Meter and Automation Group and Neptune Technology Group is more than just meters and automation, we are your *Utility Partners!*

Above all, **FERGUSON WATERWORKS** sincerely appreciates the opportunity to submit the attached proposal for your AMR/AMI Project and we look forward to presenting our unique advantages in greater detail with the staff at Trabuco Canyon Water District.

If you have any questions concerning our qualifications, please do not hesitate to contact us for clarification.

Sincerely,

Michael Balla, California Area Manager
Ferguson Waterworks | Meter & Automation

SECTION 2

SERVICE PROVIDER DESCRIPTION

2. SERVICE PROVIDER DESCRIPTION

ABOUT FERGUSON

Ferguson's new corporate campus in Newport News, VA

Established in 1953 and headquartered in Newport News, Virginia, Ferguson opened with several locations dedicated to servicing smaller plumbing contractors. From this modest start, we raised the bar for industry standards as the top-rated and largest wholesale supplier of commercial and residential plumbing supplies in the U.S. However, our expertise goes beyond plumbing. We are a diverse distributor that spans multiple businesses including HVAC/R, waterworks and industrial. For nearly 70 years, we've grown from a local plumbing distributor to a $19.9 Billion company with more than 1,600 locations and over 29,000 associates nationwide. We pride ourselves on delivering world-class service to our customers, and they know that "Consider it done." is more than just a tagline. It's a cultural belief that is demonstrated every day through exceptional customer service, product selection and industry knowledge. For added expertise around water meters and AMR/AMI technologies, Ferguson has made a significant investment in creating the Meter and Automation Group. This substantial investment of human and capital resources with a focus specifically on AMR/AMI has allowed us to partner with four of the top five-meter manufacturers in the country and claim a leadership position in the sales and service of AMR/AMI projects. As the authorized distributor for Neptune in California, Ferguson can leverage its branch network and municipal sales focus to bring unprecedented support to any meter project.

INDUSTRY LEADER IN AMR/AMI TECHNOLOGY

Dedicated Ferguson AMR/AMI sales, service and support employees

More than 2 million points sold since the year 2000

In-house project management team provides assistance for a variety of water meter installation services

Project management services for subcontractor installation

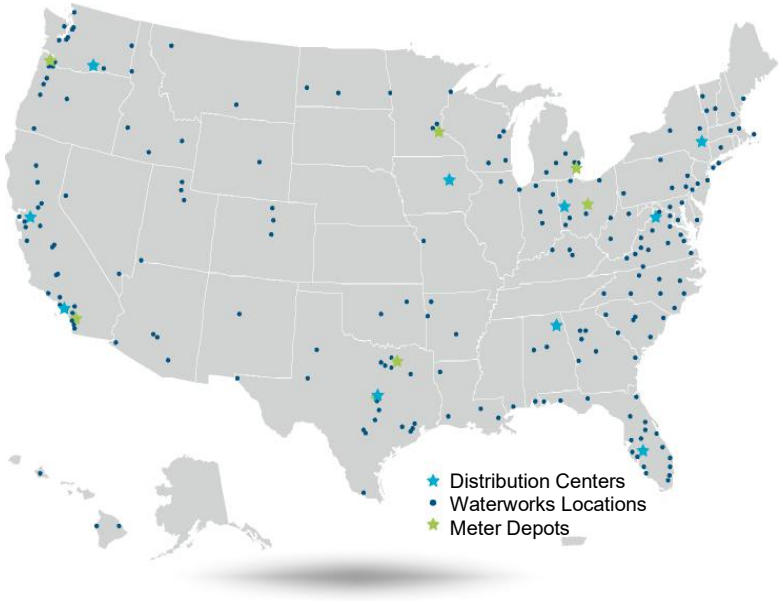
Service and support with a customized maintenance program after sale and installation

FERGUSON LOCATIONS AND LOCAL SUPPORT

Ferguson has over 1,600 branch locations across the United States. **On the Waterworks side, your servicing branch in Santa Ana represents just one of roughly 300 Ferguson Waterworks locations across the nation**. **18 of those are in the state of California.** This allows us to maintain additional stocking levels to ensure that cities will never have to wait for deliveries. This also means that there is no need to tie up funds in a utility's warehouse inventory. Our well-trained staff will also be able to quickly respond to any issues as they arise, as the success of any AMI system is dependent on solid project experience and support. Ferguson Waterworks is one of the largest suppliers of water, sewer and storm management products and services to multiple segments of the waterworks sector. We serve public and private water and sewer authorities, residential and commercial utility contractors, and treatment plant contractors.

FERGUSON WATERWORKS METER DEPOTS

Ferguson Waterworks can better service our customers with seven strategically located meter depots that offer shorter lead times on stocked products, including the most commonly used meters ranging from 5/8" x 1/2" to 8" and metering technology.



CONTRACTOR SPECIFICS

FULL LEGAL NAME: Ferguson Enterprises, LLC dba Ferguson Waterworks.

FEDERAL TAX ID: 54-1211771

CORPORATE HEADQUARTERS ADDRESS: 12500 Jefferson Ave. Newport News, VA

LOCAL BRANCH ADDRESS: Ferguson Waterworks – Santa Ana
1315 Santiago St. Santa Ana, CA 92701

ABOUT NEPTUNE

Neptune is an AMR/AMI systems vendor with a successful history for over 120 years. As a leading provider of meter reading systems and water measurement products, Neptune has continually focused on the evolving needs of water utilities – revenue optimization, operational efficiencies, and improved customer service. Our vision is to be viewed as the ***most valued partner*** of our utility customers and help them manage the world's scarce water, energy, and human funding resources.

Neptune's fully integrated manufacturing facility ensures a dependable and dedicated support for all hardware, software, and support for mobile Advanced Meter Reading (AMR) and fixed-base Advanced Metering infrastructure (AMI) systems. All Neptune water meters meet or exceed American Water Works Association standards as well as all the revised requirements of the Safe Drinking Water Act (SDWA). Accurate meter readings are guaranteed with Neptune's absolute encoder technology — a field-proven meter reading concept first introduced in 1964. This solid foundation allows a seamless migration from manual data collection to handheld, mobile, and fixed network radio frequency systems. Neptune's migration approach means you'll never outgrow Neptune technology.

Neptune has approximately 700 employees in North America producing meter reading systems and water measurement products. Neptune's state-of-the-art, ISO9001-certified, 300,000-square-foot facility in Tallassee, Alabama houses our integrated manufacturing, engineering and support capabilities. Additionally, Neptune opened its Atlanta based Innovation Center in the spring of 2017 with a focus on software and hardware development, including IT support.

Key Facts

- 715 employees located in the US, Canada, and Mexico
- 300,000 square foot manufacturing facility
- 100% lead free foundry
- 4000+ AMR/AMI reading systems deployed
- System hardware optimized for water applications
- Superior battery management
- Common software platform optimized for mobile and fixed network applications
- Integrated RF MIU and absolute encoder technologies for Neptune meters
- R900™ building block for Smart Water solutions - Supports fixed base AMI and back up mobile AMR
- Cloud Based Data Management Software - offered as a Software-as-a-Service (SaaS) model
- AMI infrastructure support offered as Network-as-a-Service (NaaS) model

SECTION 3

PROJECT UNDERSTANDING, MANAGEMENT, AND APPROACH

3. PROJECT UNDERSTANDING, MANAGEMENT AND APPROACH

PROPOSED AMI SYSTEM

T-10® Water Meters – These lead-free meters offer water utilities field-proven accuracy, reliability, and long-lasting performance at a wide effective flow range. The T-10® water meters are time-proven for accuracy and dependability even at low flow rates and provide a wide effective flow range for maximum revenue. The T-10 water meter is manufactured right here in America in our own foundry using proprietary technology.

MACH 10® Ultrasonic Water Meter – The MACH 10 features no moving parts, ensuring continued accuracy and performance over the life of the meter and maximum revenue generation from your metering program. Its high-resolution measurement allows you to accurately capture extremely low flow rates, while a rugged, lead-free bronze maincase adds to its long term performance.

High Performance Turbine Meter – Neptune's High Performance (HP) Turbine water meters provide water utilities with accurate readings at flows from 4 gpm to 8,000 gpm. HP Turbine water meters offer some of the widest flow ranges of any turbine meters on the market. All HP Turbine water meters meet or exceed the latest performance and accuracy requirements of AWWA C701 and maximum continuous flow rates may be exceeded by as much as 25% for intermittent periods.

E-Coder®) R900i™ – Neptune's E-CODER®)R900*i*™integrates the E-CODER® register with the R900® endpoint, providing two-way communications of advanced metering data, and enabling walk-by, mobile, and fixed network reading. The E-CODER)R900*i*'s interleaved mobile and high-power fixed network messages allow for simple migration from walk-by to mobile to fixed network reading without site visits or reprogramming. From increasing efficiencies to pinpointing possible tamper or water theft to aiding customer service, the data supplied by the E-CODER)R900*i* can help your utility make better, more confident decisions.

R900® Gateway v4 Fixed Network Data Collector – The R900® Gateway collects metering data as well as daily leak, reverse flow, and days of no flow alerts from all E-CODER®-equipped meters. Its software-defined radio (SDR) technology can process eight meter readings simultaneously and gather 360 readings per second – optimizing your fixed network with high throughput reading performance. The R900 Gateway easily integrates with walk-by and mobile methods of reading your existing R900® endpoints, so that you can choose the technology you need, where you need it – without special programming or reprogramming of MIUs. The R900 Gateway supports the R900® System's 1-watt fixed network message from endpoints, reducing infrastructure costs.

R900® Belt Clip Transceiver – Neptune's R900® Belt Clip Transceiver (BCT) can help meter reading personnel be more efficient. The R900® BCT's two-way communication to the R900® MIU eliminates meter access issues and speeds up retrieval of valuable data logging information-up to 96 days of historical hourly consumption data from an individual account. The R900 BCT's exceptional radio frequency (RF) throughput reduces meter reading time, especially in high-density environments. The R900® Belt Clip Transceiver provides the capability to perform service calls in the field by downloading historical interval data and address customer service issues onsite without a separate truck roll. Accomplished, by simply pairing the R900 BCT with an iOS or Android handheld or mobile device running the Neptune® 360™ Mobile application.

MRX920™ Mobile Data Collector – Reliable, accurate, and field-proven, Neptune's MRX920™ mobile data collector can read eight meters simultaneously and process 70 unique readings every second. It makes automatic meter reading (AMR) simple, helping to take "feet off the street" to save days or even weeks in the field while helping improve meter reader safety. The MRX920 provides seamless compatibility with all generations of R900® MIUs, while features within its MX900 software, such as Esri®-powered mapping and wireless mobility, make valuable data available in real time as you read your system.

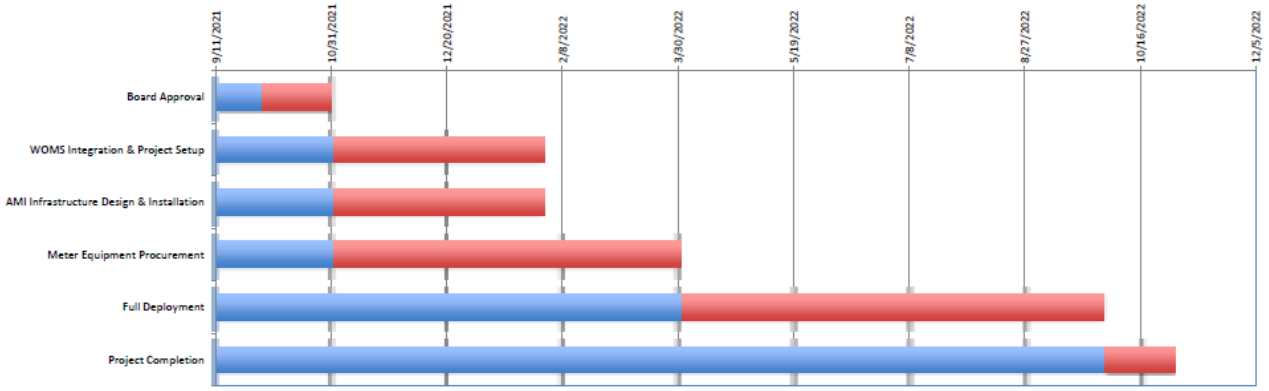
R900® Cellular Endpoint - Neptune's cellular endpoint allows you to progress at your own pace to AMI when integrated into your Neptune® R900® System. Neptune's cellular endpoint provides all of the benefits of an advanced meter reading solution without the operational burden of network infrastructure while allowing you to protect existing asset investments. An easily deployable AMI solution, the cellular endpoint allows you to start collecting actionable meter data immediately. Powered by the FirstNet® cellular network, you are assured a reliable, highly secure, and easy-todeploy AMI data solution for both current and future needs.

Neptune 360 Data Management Platform – Collect more accurate water metering data faster than ever before: Quickly identify potential leaks, excessive consumption, and reverse flow. Neptune 360 delivers an intuitive and user-friendly design that provides clear, easy-to interpret data helping maximize operational efficiencies, while empowering visibility across departments to act upon it with confidence. Lift your IT burden with a cloud-based solution that never requires server installations or upgrades on your part. Using an internet browser, log on anywhere, at any time to access the most up-to-date version. This Software-as-a-Service (SaaS) solution is monitored 24/7 and operates from a world-class data center, providing the highest level of security, redundancy and disaster recovery services. Bring your own device with the Neptune 360 Mobile application, which provides direct communication via wireless network from the field to the office. Upload data on-demand to provide more efficient customer service.

WORK SCHEDULE

Our project management team has put together the following tentative timeline of our project phases and estimated completion time. Upon signing a contract together, a more detailed schedule will be provided to the city with agreed upon completion dates.

Task Name	Start	End	Duration
Board Approval	10/1/2021	10/31/2021	30
WOMS Integration & Project Setup	11/1/2021	1/31/2022	91
AMI Infrastructure Design & Installation	11/1/2021	1/31/2022	91
Meter Equipment Procurement	11/1/2021	3/31/2022	150
Full Deployment	4/1/2022	9/30/2022	182
Project Completion	10/1/2022	10/31/2022	30
		Total	395



WORK-RELATED MATERIALS

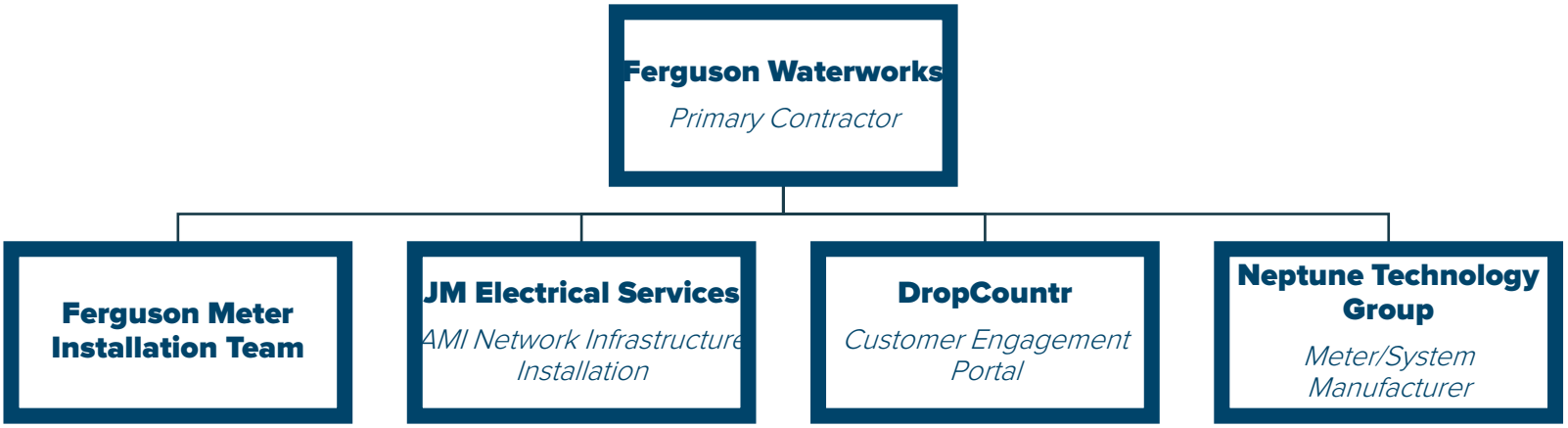
In addition to the proposed metering system, we will provide the following work-related materials to ensure a seamless and successful project.

- Ferguson Branded Vehicles
- Safety Gear
- Identification Nametags
- Standard Meter installation wrenches
- District approved gaskets, nuts, and bolts
- Any additional required tools

SECTION 4

TEAM AND EXPERIENCE

4. TEAM AND EXPERIENCE



PRIMARY POINT OF CONTACT (POC)

Adam Milauskas, Utility Solutions Specialist
adam.milauskas@ferguson.com
(949) 467-4758

KEY PERSONNEL FOR TRABUCO CANYON WATER DISTRICT

Adam Milauskas – Utility Solutions Specialist *Ferguson Waterworks*

Adam will be extremely active with District personnel and act as point man for the project. He will be using his many years of Project Management and field expertise to set the right expectations. Adam entered the metering industry in 2009 working exclusively for Neptune Distribution Partners. He started his career off as a Meter Technician, was promoted to Installation Project Manager and finally worked his way up to his current position as Utility Solutions Specialist. Adam will quarterback the different firms involved in the overall project, including our own Ferguson installation team, and of course Neptune. It is his role to make sure the District agrees with the overall project plan and that stated goals executed and exceeded.

Michael Balla – California Area Manager *Ferguson Waterworks*

Michael has been in the metering industry since 2009. Since receiving a degree from Cal State Fullerton in 2007, he started his metering career as an intern and worked his way up to his current position as Area Manager. He has an excellent understanding of what it takes to make a project successful from over a decade of experience. Michael has been a key part of metering projects such as City of Victorville, Indio Water Authority, East Valley WD, Western MWD and the City of Oceanside. Michael will be very active with key personnel in setting-up the right expectations to ensure the District is comfortable with the overall project and that stated goals are not just met but exceeded.

Brad Foster – California Sales Manager *Ferguson Waterworks*

Brad is in his 17th year of being a Neptune meter distributor. He began his career in Ferguson's meter installation group and has held many positions during his career. He's always focused on delivering expected results to our customer base. Brad will be sure that all aspects of an AMI deployment run smoothly from start to finish, acting as the hub of all of the AMI activity. He's been a part of many AMI deployments that are successfully running today (Ventura, Buena Park, North Marin Water District, East Valley WD, to name a few) and oversees the operation of 100+ Neptune AMI Gateways in California.

Russell Gray – AMI Project Manager *Ferguson Waterworks*

Russell Gray is a Senior Project Manager for Ferguson Waterworks, who partners with Consultants, Municipalities, and Water Districts alike, to oversee implementation of value-based AMR and AMI metering solutions. After spending a decade working closely with large value asset owners on water management, condition assessment, and engineering services within the water utility industry, Russell knows what decisions drive wholesale water providers and local distributors. Working closely with sales and installation teams, Russell delivers consistent and comprehensive planning that enables key decision makers to advance their agenda through actionable data. Russell holds a BS in Civil Environmental Infrastructure Engineering (CEIE) from George Mason University in Fairfax, VA.

Wes Hughes, P.E. – Installation Project Manager *Ferguson Waterworks*

Wes is a Project Manager and will be a primary contact with the District. Wes has over 20 years' experience in land development. He has been involved with projects from the aspects of design, agency approval, construction management and agency coordination. Wes has managed meter and AMI/AMR installation for 11+ years, primarily on the West Coast. He has overseen the implementation of hundreds of thousands of accounts. Wes' experiences include: the coordination of AMI infrastructure design and placement (whether on Utility sites or third-party non-utility assets), equipment, manpower, procurement, scheduling, and maintaining data integrity through the installation process.

Johnny Ho – Systems Integration Specialist *Ferguson Waterworks*

Johnny graduated from the University of Indiana. He has been working for Ferguson since 2015 having worked in the Integration Specialist role for the beginning. In that time, he has experience implementing multiple AMR and AMI systems throughout Southern California. Johnny's background in software implementation and recent work in the field have given him the experience and understanding to work with the different applications and databases that need to communicate to roll-out an AMI platform.

Andy Bohn – CA District Manager *Neptune Technology Group*

Andy is serving in his 17th year as Territory Manager for Neptune covering Southern California and Southern Nevada. His roles include sales, support and execution of positive customer experience across the Neptune product line, as well as working tightly with his distributor Ferguson Waterworks – Meter and Automation Group. Andy ensures correct order entry and delivery of products and solutions to the end user to meet project deadlines. He also is a function of support for the utility in making sure that expectations are met and requests for enhancement are relayed to our marketing team.

Jim Dunham – System Deployment Manager *Neptune Technology Group*

Having an expertise in Project Management and AMI systems, Jim has successfully completed 60+ Neptune AMI deployments (2 R450, 58 R900) including Lora network within allotted timeframe and budget constraints. Jim has 17 years of experience in project management of AMI systems and 18 years water industry in meter reading systems, software, infrastructure, and AMI solutions.

Jeff Mandell – Owner *JM Electrical Services*

Since 2012, the Ferguson Waterworks/Neptune team has trusted Jeff Mandell with the installation of Neptune's AMI network infrastructure. With over 100+ installations at over 20 separate utilities, we have the highest level of confidence with his quality of workmanship and ultimately the successful deployment of the Neptune AMI network at each utility.

SECTION 5

SCOPE OF SERVICES

5. SCOPE OF SERVICES

YOUR INSTALLATION WILL BE HANDLED BY FERGUSON'S INSTALLATION TEAM, WHICH HAS BEEN TRUSTED FOR OVER 20 YEARS FOR MORE THAN ONE MILLION METER REPLACEMENTS ACROSS THE COUNTRY.

We're always looking for ways to improve our processes and better serve our customers. One of those recent improvements was the investment in an app that captures and transfers relevant data throughout a five-step installation process that assists partners in public education, notification, data integration, mobilization and quality assurance.

All data obtained through our installation process is hosted in our work order management system and is immediately accessible by municipal partners.

PUBLIC EDUCATION

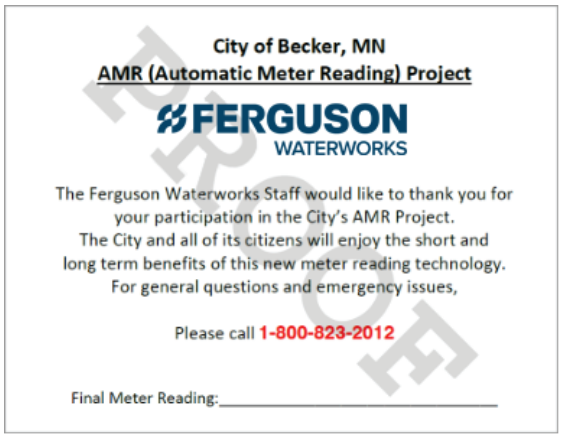
Any successful implementation requires an effective public relations campaign. We've found that upfront communication with the public is crucial. We recommend a multimedia campaign that uses print, broadcast and personal presentations to convey the project's scope. Additionally, we may provide links that relay project details, contact information and answers to frequently asked questions. This effort should begin before installation and continue after implementation, as early communication builds a more solid foundation. Because some citizens may cite concerns about radio wave safety, we've also gathered resources (white papers) to address and assuage these concerns.

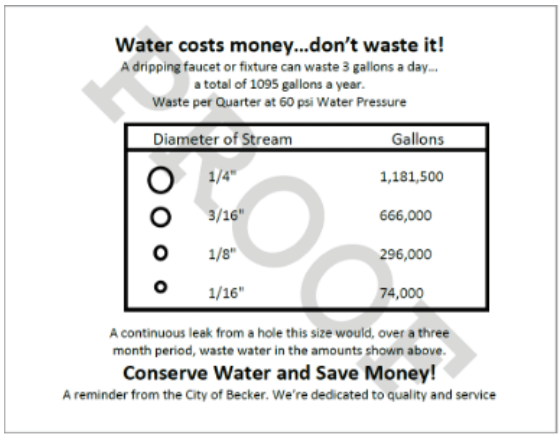
NOTIFICATION

Our business model was built in the Upper Midwest, where meters are typically found within the residence or basement mechanical room. Gaining access to homes for change-outs may present a challenge, and the importance of a clearly defined notification process is imperative for a successful project. Our standard multi-step notification process can be seen below:

STEP NO.	DESCRIPTION
1	1st notice: Postcard mailed to service address about Meter Changeout Program
2	2nd notice: Door posting noting meter will be replaced withing 72-hours and water service interruption for about 20 minutes during that period
3	3rd notice: Door posting noting the completion of the meter installation

We use a mailing center to handle stationery notifications (letters, postcards, etc.), and any correspondence can be written in several languages. Previous projects have involved notifications written in as many as four languages. Each piece can also be customized with the municipality's preferred fonts and logos. Once the installation is complete, a card (including emergency contact information) will be left for the customer to thank them for their participation.





We also maintain a fully staffed call center, available for use throughout the project's lifespan. Our customer and technician database provides smooth access to work orders and appointment-based operations, including:

- Custom-built data for setting appointments
- 24/7 service—after hours or on a holiday, you'll speak to a live associate
- After-hours call routing for emergency situations
  - Our after-hours service will contact the Installation Project Manager for help in any emergency
- Direct contact with technicians for up-to-the-minute data
- Adaptive appointment times
- Direct office-to-customer interaction for quick response to inquiries

DATA INTEGRATION & MOBILIZATION

Once a project is secured by contract, it usually takes a couple weeks of mobilization before we begin installations. The most important task, however, is the integration of data between the municipality's utility billing software (UBS) and our own installation database. Involving all necessary departments throughout the process will ease the project and contribute to its success. During mobilization, data downloads and uploads will be tested, inventory will be taken and loaded into the database, and the municipality's billing routes, geography and potential installations will be analyzed and broken down into smaller batches. Once complete, the mutually agreeable installation schedule will be finalized.

MOBILIZATION MAY INCLUDE:

- Arranging transportation and housing for Ferguson associates (if necessary)
- Securing name badges and uniforms for installers
- Printing of door tags and other notification materials
- Organizing installation tools and miscellaneous materials

INSTALLATION

All of our associates are subject to background checks in accordance with our corporate policy. If the municipality requires additional background checks, we will submit any necessary information. Our installers are trained internally, undergoing a minimum of eight (8) hours of classroom training and extensive hands-on training. Newly hired installers also work with a lead installer for two (2) weeks. Every installer is outfitted with a Ferguson uniform, a photo ID, a supply of tools, safety gear and a phone. These phones will be used to scan barcodes and eliminate manual entry, thereby reducing mistypes. Additionally, all of our associates drive easily identifiable transit vans—ensuring the public is aware of who is working on their property.

We take pride in our ability to capture, retain and transfer data—a process built into our proprietary software. Once data is pulled from the municipality's database or UBS, it is securely imported into our own database and assigned a unique work order ID. Each of these work orders will existing house account information and new information gathered during installation efforts. Each morning, installers will log into the mobile app and identify scheduled installations. Based on the aforementioned "old" account data, the software will identify meter sizes and quantities for change-out. Installers are required to check out inventory each morning and return unused meters at the end of the day, allowing us to manage project inventory and account for each meter used. This information is assigned an install code for each work order, telling us exactly what was installed for each account.

Once on-site, the installer will begin by accessing the work order and reviewing the "old" account data downloaded from the UBS. For each work order, they are required to review and verify the following items:

- Service Address
- Homeowner/Property Owner information
- Account
- Old meter number
- Old radio number (if present)
- Old meter reading
- Meter size

Once the installer has matched and confirmed physical information on-site to the electronic data, they may proceed with installation. New data captured in the field consists of the following:

Current or disconnect reading of the meter	Our application supports up to 4 distinct reads per work order
Install code	The meter and MIU are represented in the install code, ultimately showing what size/type of meter and MIU were used in the installation
Meter size	This is captured as a separate field to allow for better cross-verification and sorting of data before exporting it back to the UBS.

New meter number (if meter body is being replaced)	If meter body does not get replaced, the existing meter number is verified with the municipality's data and recorded in this field
New MIU number	This field can support two distinct MIU numbers for compound meter applications
New meter/register initial reading	Since new meters are tested at the factory and can sometimes have a small amount of usage recorded, we capture this data as well in case it's needed
MIU location	We record the location of the MIU in reference to the service property
Meter type	This is used to classify what type of application the meter is in service for
GPS Latitude and Longitude	Up to ten (10) GPS points (latitude/longitude) can also be captured while at the customer's residence. The average value of these readings is placed in the installation record
Completed date	This field is prefilled automatically with the current date when the installation/replacement is completed.
Installer Name	We record this data to allow monitoring of installations based on installer
Survey questions	These fields can vary based on what information, if any, is captured during an installation
Three (3) or more time-stamped photos of the installation	Our standard photos include before installation, current reading of existing meter, and after installation The installer will take additional photos if they encounter any conditions outside the "norm", to aid in resolving any questions or discrepancies of the data (ex. pre-existing leak)
Homeowner/Property owner signature	If needed or requested, an electronic signature can be captured for any or all work orders
Notes	This field is often used by installers to specify anything out of the ordinary about an install/replacement
MIU Initialization Data	We are able to capture the install packet of information that is sent when an MIU is initialized, and store it by account, for possible future reference

As new information is gathered during installation, it's continuously uploaded and synced with our database, providing real-time account information which can be accessed at any time. Our software has the flexibility to adjust the size of the data packets transferred from the app to the database, so no data is lost or forced to be manually reentered.

When data is received from the field, it passes through an electronic review process. Any discrepancies are flagged in the system for review and resolution. Noted discrepancies may include but are not limited to the following:

- A meter/MIU number that is not found in project inventory records
- A meter/MIU number that has already been entered for another address
- Any data returned for an address where the replacement has already been completed
- Any data from an installation where pre-installation data was unavailable for verification (unscheduled installations where a new record is created by the installer in the field)
- A scheduled installation that was cancelled and needs to be rescheduled
- Meter Size does not match meter serial number

QUALITY ASSURANCE

In order to ensure a high degree of customer satisfaction, we complete quality assurance checks on daily work. We will typically inspect 10% of the installations on a consistent basis throughout the length of the project. We will also perform fieldwork inspection and quality control checks based on the following minimum requirements:

- All new installers will have five (5) days of on-the-job training with a qualified lead installer or supervisor. This work will be 100% inspected and verified. Inspections will include the items listed on the QC Checklist below. During their second week of work, 50% of the new installer's work will be inspected and verified.
- Any installer who is found to have an error rate greater than 1% will be retrained or terminated. Following retraining, 100% of the installer's work will be inspected for a probationary five day period. If the error rate during this probationary period exceeds 1%, the installer will be removed from the project.
- All inspection results will be recorded in an auditable format, fully accessible to the municipality.
- Installations completed by associates who are terminated for not meeting installation quality standards will be further reviewed to determine if any corrective action needs to be taken by Ferguson Waterworks. The work reviewed will include all installations completed prior to the date of the first quality related infraction or at least two weeks prior to the date of termination. Additional review may be needed depending upon the results of the investigation.

QUALITY CHECKLIST:

- Register/MIU properly installed
- Seal wire and/or tampering resistant pin installed per requirements
- GPS points taken
- Required digital photos are present
- Completed survey questions

WORK ORDER MANAGEMENT SYSTEM CAPABILITIES

Once a project is secured, it may take four (4) to eight (8) weeks before installations can begin. The most important component of this preparation is the integration of UBS data with our installation software. Our proprietary system was built to maximize the capture and transfer of data, limiting manual input and human error.

We'll develop a download of all relevant customer data from the UBS and populate our database with the same information. As we sort and scrub the data, we'll collaborate with necessary officials and administrators. It's vital that all impacted departments participate in the initial phases of deployment, and may include GIS, IT, billing/ finance, distribution, production, customer service and water management. Greater involvement leads to greater success.

Once data interface issues are resolved in a "pilot" environment, we'll move to full-scale production. After review of billing routes and geography, potential installations will be broken down into smaller batches and an installation schedule will be finalized. On larger projects, this mobilization phase has taken up to five (5) months, though we typically anticipate a period of one (1) to two (2) months.

As installations are completed, captured data will be reviewed electronically to detect anomalies (mismatches, duplicates, missing information, etc.). Once all discrepancies are resolved, we'll provide an electronic upload from our database for the municipality's UBS.

We'll also work with the municipality to develop an accommodation process for existing meters and the integration of new meters to maintain minimal disruptions to water billing cycles.

FERGUSON STANDARD SCOPE OF WORK

The proposer's pricing and installation scope of water meters and radio modules assume a "standard" installation. A **standard pit meter installation** is recognized as one which involves the replacement of an existing meter meeting the following conditions:

1) Meters will be located with adequate access, or if access is restricted, Contractor will be able to obtain access from the property owner with one week of request during normal business hours.

2) Meter access will not subject Contractor's employees to dangerous or unsafe working conditions.

3) Contractor will not be required to repair or replace pipe due to corrosion, existing damage, plumbing irregularities, or substandard conditions.

4) Water meters are equipped with standard meter connections that can be reused during meter installation.

5) Meter exchanges are like-for-like, same lay length and no plumbing is required.

6) No additional labor or groundwork will be needed to access meters, including but not limited to cutting, removing, or replacing asphalt or tree roots.

CUSTOMER NOTIFICATION PROTOCOL:

Ferguson will provide up to three (3) documented customer notifications:

1) First a postcard notification is sent out notifying the customer as to the upcoming Meter Changeout Program.

2) Second a door-tag is placed at the property. Notice is given to the customer that their meter will be replaced within 72 hours by the Contractor and that water service will be interrupted for about 20 minutes during that period.

3) Third a completion door-tag is placed at the property. Notice is given to the customer that the meter installation has been completed.

In the event Contractor determines that any meter installation is not a standard pit meter installation, the Contractor will immediately bring the matter to the attention of the Owner's representative who will inspect the condition and advise Contractor on how to proceed within a 24hour timeframe. If additional work is requested by Owner, such work will be completed at an agreed upon hourly rate plus materials.

SECTION 6

COMPARABLE PROJECTS

6. COMPARABLE PROJECTS

Mission Springs Water District
66575 2nd St., Desert Hot Springs CA

Contact: April Scott, Customer Service Manager

Phone: (760) 329-6448

Email: ascott@mswd.com

Project Description: Full R900 AMI Fixed-Network: 13,000 Neptune T10 Meters & Ferguson Installation

East Valley Water District
31111 Greenspot Rd., Highland CA

Contact: Jason Wolf, Sr. Engineer

Phone: (909) 806-4088

Email: jwolf@eastvalley.org

Project Description: Full R900 AMI Fixed-Network: 24,000 Neptune T10 Meters & Ferguson Installation

City of Buena Park
6955 Aragon Circle, Buena Park CA

Contact: Mike McGee, Water Services Superintendent

Phone: (714) 732-0013

Email: mmcgee@buenapark.com

Project Description: Full R900 AMI Fixed-Network: 19,500 Neptune T10 Meters & Ferguson Installation

City of Ventura
336 Sanjon Rd., Ventura CA

Contact: Jeremy Hanson, Water Distribution Supervisor

Phone: (805) 833-0039

Email: jhanson@cityofventura.ca.gov

Project Description: Full R900 AMI Fixed-Network: 31,500 Neptune T10 Meters

City of Lakewood
5812 Arbor Rd., Lakewood CA

Contact: Mike Santillan, Water Distribution Supervisor

Phone: (562) 455-7171

Email: msantillan@lakewoodcity.org

Project Description: Full R900 AMI Fixed-Network: 20,000 Neptune T10 Meters

Las Virgenes Municipal Water District
4232 Las Virgenes Rd., Calabasas CA

Contact: Craig Jones, Management Analyst II

Phone: (805) 320-0527

Email: cjones@lvmwd.com

Project Description: Full R900 AMI Fixed-Network: 21,000 Neptune T10 Meters & Ferguson Installation

Valley County Water District
14521 Ramona Blvd., Baldwin Park CA

Contact: Jose L. Martinez, General Manager

Phone: (626) 338-7301

Email: jmartinez@vcwd.org

Project Description: Full R900 AMI Fixed-Network: 12,500 Neptune T10 Meters

Palmdale Water District
2029 East Avenue Q., Palmdale CA

Contact: Scott L. Rogers

Phone: (661) 456-1020

Email: srogers@palmdalewater.org

Project Description: Full R900 AMI Fixed-Network: 28,000 Neptune T10 Meters

SECTION 7

SERVICE PRICING AND RATE SCHEDULE

7. SERVICE PRICING AND RATE SCHEDULE

Trabuco Canyon Water District
AMI Cost Proposal
AMI Network and Equipment - District Owns & Maintains Network

Item/Service	Quantity	Unit Price	Extended Price	Lead Time (in weeks)	Notes/Comments
Upfront AMI Hardware					
AMI Network Infrastructure					
Powered Data Collector	7	$ 9,500.00	$ 66,500.00	4 Weeks	*7 Powered Neptune R900 Gateways **Subject to change upon field visit*
Solar Data Collector	2	$ 10,500.00	$ 21,000.00	N/A	*2 Solar Neptune R900 Gateways **Subject to change upon field visit*
Network Installation Services	9	$ 9,250.00	$ 83,250.00	N/A	*7 Powered & 2 Solar **Standard Gateway Installations*
Subtotal			**$ 170,750.00**		
AMI Network and Deployment Tools					
Handheld programming device	0	$ -	$ -		*Neptune's R900 system does not require programming*
Subtotal			$ -		
Meter Endpoints					
Water Meter Endpoint - Single	0		$ -		*Water meters proposed include integrated endpoints*
Subtotal			$ -		
Upfront Professional Services					
Project Management	1	$ 6,000.00	$ 6,000.00	N/A	
Network Design/System Planning	1	$ 1,000.00	$ 1,000.00	N/A	
System Acceptance Testing	1	$ 1,500.00	$ 1,500.00	N/A	
Training and Documentation (Network Hardware)	1	$ 3,500.00	$ 3,500.00	N/A	
Performance Bond	0	$ -	$ -	N/A	*No Payment and/or Performance Bonds included in proposal*
			$ -		
Subtotal			**$ 12,000.00**		
Other Upfront AMI Network Costs					
Shipping	0	$ -	$ -		*No charge on orders over $20,000.00*
Subtotal			$ -		
Subtotal			$ 182,750.00		
7.75% Sales Tax NOT INCLUDED					
Total AMI Network Upfront Costs			**$ 182,750.00**		
Water Meter Hardware					
Water Meters with Registers					
5/8"	2043	$229.00	$ 467,847.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
3/4" SL 7.5" Lay-Length	706	$250.00	$ 176,500.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
1"	188	$300.00	$ 56,400.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
1.5"	39	$525.00	$ 20,475.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
2"	124	$650.00	$ 80,600.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
3"	19	$1,550.00	$ 29,450.00	4 Weeks	*Neptune HP Turbine Meters*
4"	4	$1,750.00	$ 7,000.00	4 Weeks	*Neptune HP Turbine Meters*
6"	5	$3,150.00	$ 15,750.00	4 Weeks	*Neptune HP Turbine Meters*
10"	2	$7,100.00	$ 14,200.00	4 Weeks	*Neptune HP Turbine Meters*
Subtotal	**3130**				
Retrofits					
5/8"	561	$22.00	$ 12,342.00	4 Weeks	*6' Neptune R900 External Antenna*
3/4"	168	$22.00	$ 3,696.00	4 Weeks	*6' Neptune R900 External Antenna*
1"	305	$22.00	$ 6,710.00	4 Weeks	*6' Neptune R900 External Antenna*
1.5"	13	$22.00	$ 286.00	4 Weeks	*6' Neptune R900 External Antenna*
2"	51	$22.00	$ 1,122.00	4 Weeks	*6' Neptune R900 External Antenna*
3"	4	$22.00	$ 88.00	4 Weeks	*6' Neptune R900 External Antenna*
4"	2	$22.00	$ 44.00	4 Weeks	*6' Neptune R900 External Antenna*
6"	2	$22.00	$ 44.00	4 Weeks	*6' Neptune R900 External Antenna*
Subtotal	**1106**		**$ 892,554.00**		
7.75% Sales Tax NOT INCLUDED					
Total Metering Upfront Costs			**$ 892,554.00**		
Ongoing AMI Network Services					
RF Licensing	0	$ -	$ -	N/A	*Neptune's R900 system utilizes unlicensed technology*
AMI Network Backhaul	0	$ -	$ -	N/A	*District to contract directly with Verizon or AT&T*
Maintenance	0	$ -	$ -	N/A	*Optional entitlement in "Optional Equipment & Services" tab*
Service Fees	0		$ -		
			$ -		
Subtotal			$ -		

ASSUMPTIONS:

Sales Tax NOT INCLUDED & only applicable to hardware, not services
***Meter box lids NOT included in proposal (Optional Equipment)
Assumes 7 Powered Gateways. Subject to change pending field survey.
Assumes 7 Powered Gateway installations. Subject to change pending field survey.
Assumes 2 Powered Gateways. Subject to change pending field survey.
Assumes 2 Powered Gateway installations. Subject to change pending field survey.
Assumes all 3", 4", 6", 10" meters are Turbine meters
Standard Gateway install included up to 50' of above ground conduit for new 120v AC circuit to power ups/gateway
Standard Gateway install does not include trenching, asphalt cutting, demo, or concrete work
TOTALS IN BLUE

Trabuco Canyon Water District
AMI Cost Proposal
AMI Headend Hosted

Item/Service	Quantity	Unit Price	Extended Price	Equipment Lead Time (in weeks)	Notes/Comments
Upfront AMI Software					
One-Time Database Set-Up Fee	1	$ 2,500.00	$ 2,500.00		*Setup of Neptune 360 Amazon Cloud Server*
Annual AMI Headend Software Hosting Fee	1	$10,750.00	$10,750.00	N/A	*Neptune 360 Hosting Year 1*
Subtotal			$ 13,250.00		
Upfront Professional Services					
Project Management	0	$ -	$ -	N/A	
AMI/CIS System Integration	0	$ -	$ -	12 Weeks	*District to contract directly w/CIS Vendor*
AMI/Customer Portal Integration	0	$ -	$ -	12 Weeks	*District to contract directly w/CIS Vendor*
Subtotal			$ -		
Other Upfront AMI Headend Costs					
	0	$ -	$ -		
Subtotal			$ -		
Total AMI Headend Hosted Upfront Costs			$ 13,250.00		
Ongoing AMI Headend Services					
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 2*
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 3*
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 4*
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 5*
Subtotal			$0.00		

ASSUMPTIONS:
No sales tax on services
TOTALS IN BLUE

Trabuco Canyon Water District
AMI Cost Proposal
Customer Web Portal

Item/Service	Quantity	Unit Price	Extended Price	Equipment Lead Time (in weeks)	Notes/Comments
Upfront AMI Software					
One-Time Database Set-Up Fee	1	$ 11,250.00	$ 11,250.00		*Setup of DropCountr Hosted Cloud Server*
Annual Customer Web Portal Software Hosting Fee	1	$8,500.00	$8,500.00	N/A	*DropCountr Hosting Year 1*
Subtotal			$ 19,750.00		
Upfront Professional Services					
Project Management	0	$ -	$ -	N/A	
Subtotal			$ -		
Other Upfront AMI Headend Costs					
	0	$ -	$ -	N/A	
Subtotal			$ -		
Total AMI Headend Hosted Upfront Costs			$ 19,750.00		
Ongoing AMI Headend Services					
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 2*
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 3*
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 4*
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 5*
Subtotal			$0.00		

ASSUMPTIONS:
No sales tax on services
TOTALS IN BLUE

Trabuco Canyon Water District
AMI Cost Proposal
Meter Installation

Item/Service	Quantity	Unit Price	Extended Price	Notes/Comments
Meters & Meter Equipment Installation				
Installation of Water Meter and Ancillary Equipment				
5/8"	2043	$ 88.20	$ 180,192.60	*Standard Meter Installation*
3/4" SL 7.5" Lay-Length	706	$ 88.20	$ 62,269.20	*Standard Meter Installation*
1"	188	$ 88.20	$ 16,581.60	*Standard Meter Installation*
1.5"	39	$ 440.00	$ 17,160.00	*Standard Meter Installation*
2"	124	$ 440.00	$ 54,560.00	*Standard Meter Installation*
3"	19	$ 625.00	$ 11,875.00	*Standard Meter Installation*
4"	4	$ 625.00	$ 2,500.00	*Standard Meter Installation*
6"	5	$ 2,498.00	$ 12,490.00	*Standard Meter Installation*
10"	2	$ 3,748.00	$ 7,496.00	*Standard Meter Installation*
Subtotal	3,130		**$ 365,124.40**	
Water Meter Retrofit Antenna				
5/8"	561	$ 30.48	$ 17,099.28	*Antenna Install, no lid replacement*
3/4"	168	$ 30.48	$ 5,120.64	*Antenna Install, no lid replacement*
1"	305	$ 30.48	$ 9,296.40	*Antenna Install, no lid replacement*
1.5"	13	$ 30.48	$ 396.24	*Antenna Install, no lid replacement*
2"	51	$ 30.48	$ 1,554.48	*Antenna Install, no lid replacement*
3"	4	$ 30.48	$ 121.92	*Antenna Install, no lid replacement*
4"	2	$ 30.48	$ 60.96	*Antenna Install, no lid replacement*
6"	2	$ 30.48	$ 60.96	*Antenna Install, no lid replacement*
Subtotal	1,106		**$ 33,710.88**	
Water Meter Lid Installation				
Pre-drilled Meter Box Lid Installation	-	$ 12.97	$ -	*Optional Lid Replacement*
Subtotal			$ -	
Professional Services				
Project Management	1	$ 5,000.00	$ 5,000.00	
Mobilization	1	$ 11,500.00	$ 11,500.00	
Work Order Management System Costs		$ -	$ -	*Included in per unit price*
Estimated Not to Exceed Travel and Living Expenses		$ -	$ -	*Included in per unit price*
Printing Fees (Door Hangers)	-		$ -	*District is to provide*
Call Center Support Fees	-		$ -	*District is to provide*
Return to Utility (RTU) Charges	-	$ 88.20	$ -	*For 2nd revisit per location*
Subtotal			**$ 16,500.00**	
Other Installation Services				
			$ -	
Staging Site/Warehouse Space	-		$ -	*District to provide*
Time & Materials Hourly Rate	-	$ 150.00	$ -	*Include estimates for relocation meters to the curb and other such activities.*
Subtotal			$ -	
TOTAL WATER METER INSTALLS + EQUIPMENT			**$ 415,335.28**	

Assumptions:
No sales tax on services
TOTALS IN BLUE

Trabuco Canyon Water District
Cost Proposal
Optional Equipment & Services

	Quantity	Unit Price	Extended Price	Lead Time (in weeks)	Notes/Comments
Water Options					
Other Meter & Endpoint Options					
1.5" Neptune Mach10i Ultrasonic Meter	-	$750.00	$ -	4 Weeks	*10" or 13" Lay-Length*
2" Neptune Mach10i Ultrasonic Meter	-	$900.00	$ -	4 Weeks	*10" or 15.25" or 17" Lay-Length*
3" Neptune Mach10i Ultrasonic Meter	-	$1,950.00	$ -	4 Weeks	*17" Lay-Length*
4" Neptune Mach10i Ultrasonic Meter	-	$2,500.00	$ -	4 Weeks	*20" Lay-Length*
6" Neptune Mach10i Ultrasonic Meter	-	$4,000.00	$ -	4 Weeks	*24" Lay-Length*
10" Neptune Mach10i Ultrasonic Meter	-	$9,500.00	$ -	4 Weeks	*26" Lay-Length*
5/8" Meter w/Cellular Radio w/1-Year Data Plan	-	$282.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
3/4" SL Meter w/Cellular Radio w/1-Year Data Plan	-	$305.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
1" Meter w/Cellular Radio w/1-Year Data Plan	-	$350.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
1.5" Meter w/Cellular Radio w/1-Year Data Plan	-	$550.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
2" Meter w/Cellular Radio w/1-Year Data Plan	-	$675.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
Cellular Radio Only	-	$133.00	$ -	4 Weeks	*Neptune R900C - Cellular Endpoint Only*
1-Year Cellular Data Plan	-	$11.45	$ -	N/A	Annual Data Plan for Neptune Cellular Radio
20' External Antenna	-	$32.00	$ -	4 Weeks	*For Meters in Deep Vaults*
Reading Alternatives					
Walk-By/AMR Reading/Datalogging Equipment	-	$ 2,500.00	$ -	4 Weeks	Neptune Belt Clip Transceiver
Vehicle-Mounted Collector Equipment	1	$ 7,000.00	$ 7,000.00	4 Weeks	Neptune MRX Mobile Data Collector
Backup Powered Gateway	1	$ 9,500.00	$ 9,500.00	5 Weeks	Recommended 1 backup on hand
Optional Services					
Optional 5-Year Gateway Entitlement	-	$ 4,000.00	$ -		Upfront Cost per Gateway
Meter Box Lids					
363 1/2 w/ R900 Antenna Hole	-	$25.75	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
437 w/ R900 Antenna Hole	-	$34.50	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
438 w/ R900 Antenna Hole	-	$48.25	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
655 1/2 w/ R900 Antenna Hole	-	$58.50	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
666B w/ R900 Antenna Hole	-	$71.70	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
Subtotal			$ 16,500.00		
7.75% Sales Tax NOT INCLUDED					
Total Recommended Optional Equipment Costs			$ 16,500.00		

Assumptions:
Sales Tax NOT INCLUDED & only applicable to hardware, not services
Meter box lids are optional. District can utilize touchpad hole in existing meter box lids
TOTALS IN BLUE

SECTION 8

APPENDICES

8. APPENDICES

- Product Specification Sheets
- Warranty Sheets
- Customer Portal Information - DropCountr
- Propagation Study
- Certificate of Insurance
- Exceptions & Clarifications
- Enlarged Price Sheet

PRODUCT SPECIFICATION SHEETS

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

T-10 Meter

SIZES ⅝", ¾", AND 1"

Every T-10® water meter meets or exceeds the latest AWWA C700 Standard. Its nutating disc, positive displacement principle has been time-proven for accuracy and dependability since 1892, ensuring maximum utility revenue.

Construction

The T-10 water meter consists of three major assemblies: a register, a lead free, high-copper alloy maincase, and a nutating disc measuring chamber.

The T-10 meter is available with a variety of register types. For reading convenience, the register can be mounted in one of four positions on the meter.

The corrosion-resistant, lead-free, high-copper alloy maincase will withstand most service conditions; internal water pressure, rough handling, and in-line piping stress.

The innovative floating chamber design of the nutating disc measuring element is unaffected by meter position of in-line piping stresses while the unique chamber seal extends the low-flow accuracy by sealing the chamber outlet port to the maincase outlet port. The nutating disc measuring element utilizes corrosion-resistant materials throughout and a thrust roller to minimize wear.

Warranty

Neptune® provides a limited warranty with respect to its T-10 water meters for performance, materials, and workmanship.

When desired, maintenance is easily accomplished either by replacement of major assemblies or individual components.

Guaranteed Systems Compatibility

All T-10 water meters are guaranteed adaptable to our ARB®V, ProRead™ (ARB VI) AutoDetect, ProCoder™, E-CODER® (ARB VII), E-CODER®)R900*i*™, E-CODER®)R450*i*™, E-CODER®)L900*i*™, TRICON®/S, TRICON/E®3, and Neptune meter reading systems without removing the meter from service.

Systems Compatibility

Adaptability to all present and future systems for flexibility is available only with Neptune's ARB® Utility Management Systems™.

KEY FEATURES

REGISTER

- Magnetic-driven, low-torque registration ensures accuracy
- Impact-resistant register
- High-resolution, low-flow leak detection
- Bayonet-style register mount allows in-line serviceability
- Tamperproof seal pin deters theft
- Date of manufacture, size, and model stamped on dial face

LEAD FREE MAINCASE

- Made from lead free, high-copper alloy
- NSF/ANSI 372, NSF/ANSI 61
- Lifetime guarantee
- Resists internal pressure stresses and external damage
- Handles in-line piping variations and stresses
- Lead free, high-copper alloy provides residual value vs. plastic or composite
- Electrical grounding continuity

NUTATING DISC MEASURING CHAMBER

- Positive displacement
- Widest effective flow range for maximum revenue
- Proprietary polymer materials maximize long-term accuracy
- Floating chamber design is unaffected by meter position or in-line piping stresses

Specifications

- NSF/ANSI 372, NSF/ANSI 61
- National Type Evaluation Program (NTEP) certification

Application

- Cold water measurement of flow in one direction in residential service applications

Maximum Operating Water Pressure

- 150 psi (1034 kPa)

Maximum Operating Water Temperature

- 80°F

Measuring Chamber

- Nutating disc technology design made from proprietary synthetic polymer

Options

Sizes

- ⅝", ⅝" x ¾"
- ¾", ¾" SL, ¾" x 1"
- 1", 1" x 1¼"

Units of Measure:

- U.S. gallons, imperial gallons, cubic feet, cubic metres

Register Types

- Direct reading: bronze box and cover (standard)

Remote Reading:

- ProRead, ProCoder, E-CODER, E-CODER)R900*i*, E-CODER)R450*i*, E-CODER)L900*i*, TRICON/S, TRICON/E3
- Reclaim

Bottom Caps

- Synthetic polymer (⅝" only)
- Cast iron
- Lead free, high-copper alloy

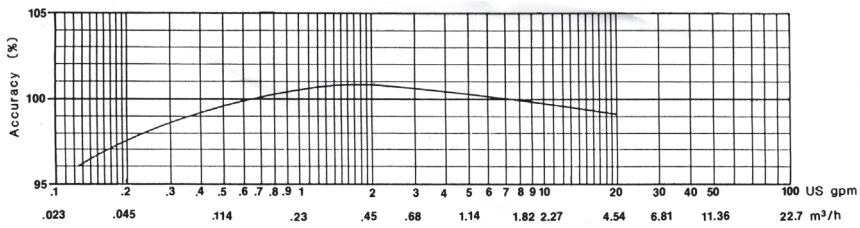
Connections

- Lead free, high-copper alloy, straight or bent

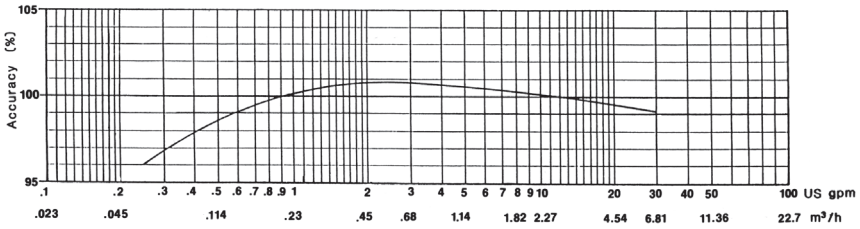
Environmental Conditions

- Operating temperature: +33° F to +149° F (0° C to +65° C)
- Storage temperature: +33° F to +158° F (0° C to +70° C)

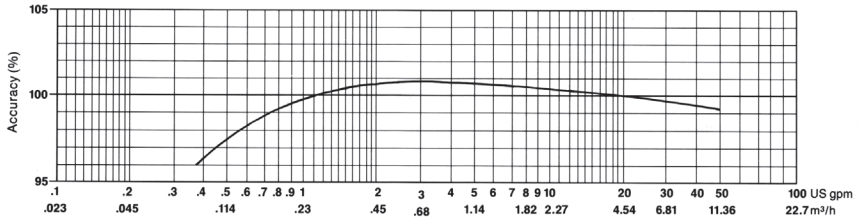
⅝" ACCURACY



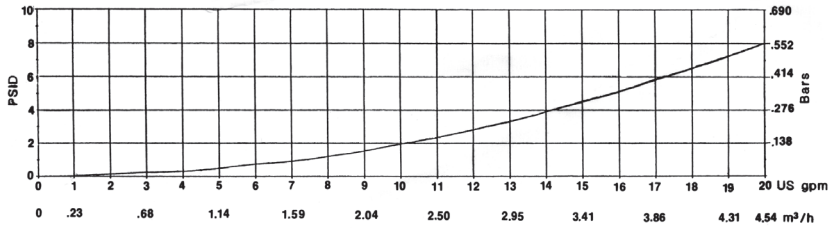
¾" ACCURACY



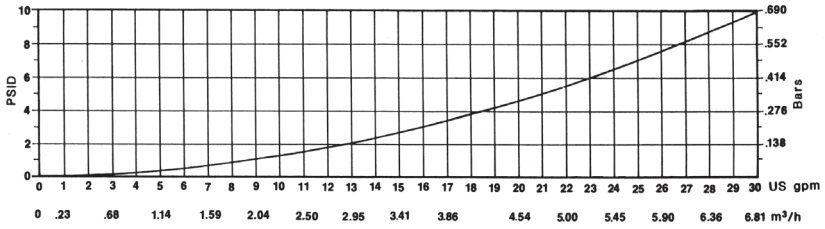
1" ACCURACY



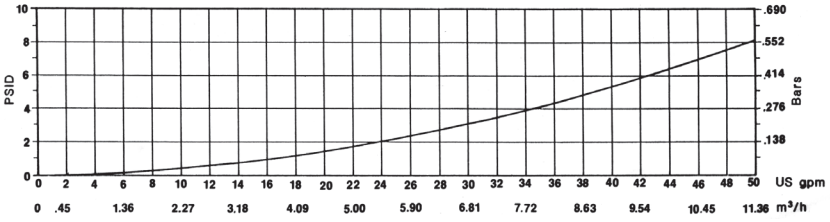
⅝" PRESSURE LOSS



¾" PRESSURE LOSS

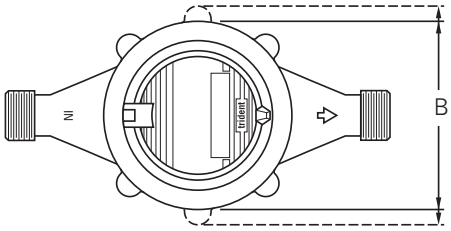


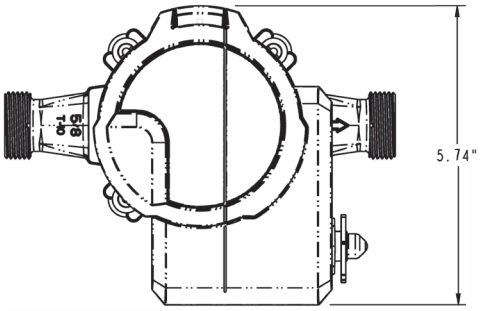
1" PRESSURE LOSS

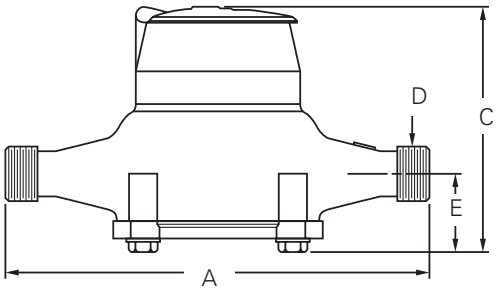


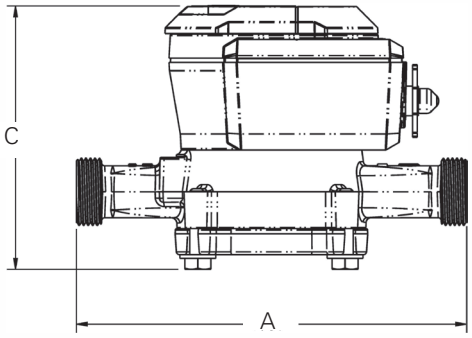
Dimensions

Meter Size	A	B	C					D-	E-	Weight lbs/kg
	in/ mm	in/ mm	Std. in/mm	ARB in/mm	ProCoder™ or E-CODER®	ProCoder™) R900*i*™ or ProCoder™) R450*i*™	E-CODER®) R900*i*™or E-CODER®) R450*i*™	NPSM Thread	in/ mm	
5/8	7½ 191	3⅝ 92	4⅜ 111	5¼ 133	5¼ 133	5¼ 133	5¼ 133	¾" - 14	1½ 38	3¼ 1.4
5/8 x ¾	7½ 191	3⅝ 92	4⅜ 111	5¼ 133	5¼ 133	5¼ 133	5¼ 133	1" - 11½	1½ 38	3⅜ 1.5
Pre 2011 ⅝	7½ 191	3⅝ 92	4⅞ 124	5½ 146	5½ 139	5½ 139	5½ 139	¾" - 14	1⅝ 41	3¾ 1.7
Pre 2011 ⅝ x ¾	7½ 191	3⅝ 92	4⅞ 124	5½ 146	5½ 139	5½ 139	5½ 139	1" - 11½	1⅝ 41	4 1.8
3/4	9 229	4⅜ 111	5½ 140	6¼ 159	6¼ 159	6¼ 159	6¼ 159	1" - 11½	1⅞ 48	6 2.7
¾" SL	7½ 911	4⅜ 111	5½ 140	6¼ 159	6¼ 159	6¼ 159	6¼ 159	1" - 11½	1⅞ 48	5½ 2.5
¾ x 1"	9 229	4⅜ 111	5½ 140	6¼ 159	6¼ 159	6¼ 159	6¼ 159	1¼" - 11½	1⅞ 48	6½ 2.9
1"	10¾ 273	6½ 165	6⅜ 162	7 178	7 178	7 178	7 178	1¼" - 11½	2⅛ 54	9¾ 4.4
1" x 1¼	10¾ 273	6½ 165	6⅜ 162	7 178	7 178	7 178	7 178	1½" - 11½	2⅛ 54	10¼ 4.6









Operating Characteristics

Meter Size	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	AWWA Standard	Low Flow @ 95% Accuracy
5/8"	1/2 to 20 US gpm 0.11 to 4.55 m^3/h	1 to 20 US gpm 0.23 to 4.5 m^3/h	1/8 US gpm 0.03 m^3/h
3/4"	3/4 to 30 US gpm 0.17 to 6.82 m^3/h	2 to 30 US gpm 0.45 to 6.8 m^3/h	1/4 US gpm 0.06 m^3/h
1"	1 to 50 US gpm 0.23 to 11.36 m^3/h	3 to 50 US gpm 0.68 to 11.4 m^3/h	3/8 US gpm 0.09 m^3/h

Registration

ProRead Registration (per sweep hand revolution)		**5/8"**	**3/4" & 1"**
10	US Gallons	√	√
10	Imperial Gallons	√	√
1	Cubic Foot	√	√
0.1	Cubic Metre	√	√
Register Capacity ProRead, ProCoder, and E-CODER		**5/8"**	**3/4" & 1"**
10,000,000	US Gallons	√	√
10,000,000	Imperial Gallons	√	√
1,000,000	Cubic Feet	√	√
100,000	Cubic Metres	√	√
ProCoder and E-CODER High Resolution (8-digit reading)		**5/8"**	**3/4" & 1"**
0.1	US Gallons	√	√
0.1	Imperial Gallons	√	√
0.01	Cubic Feet	√	√
0.001	Cubic Metres	√	√

NEPTUNE TECHNOLOGY GROUP

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

T-10® METER

SIZES: 1 ½" and 2"

Construction

Every Neptune® T-10® water meter meets or exceeds the latest AWWA C700 Standard. Its nutating disc, positive displacement principle has been time-proven for accuracy and dependability since 1892, ensuring maximum utility revenue.

The T-10 water meter consists of three major assemblies: a register, a lead free, high-copper alloy maincase, and a nutating disc measuring chamber.

The T-10 meter is available with a variety of register types. For reading convenience, the register can be mounted in one of four positions on the meter.

The corrosion-resistant, lead-free, high-copper alloy maincase will withstand most service conditions: internal water pressure, rough handling, and in-line piping stress.

The innovative floating chamber design of the nutating disc measuring element protects the chamber from frost damage while the unique chamber seal extends the low-flow accuracy by sealing the chamber outlet port to the maincase outlet port. The nutating disc measuring element utilizes corrosion-resistant materials throughout and a thrust roller to minimize wear.

Warranty

See Neptune Meter Warranty Statement for warranty details.

When desired, maintenance is easily accomplished either by replacement of major assemblies or individual components.

KEY FEATURES

Register

- Magnetic-driven, low-torque registration ensures accuracy
- Impact-resistant register
- High-resolution, low-flow leak detection
- Bayonet-style register mount allows in-line serviceability
- Tamperproof seal pin deters theft
- Date of manufacture, size, and model stamped on dial face

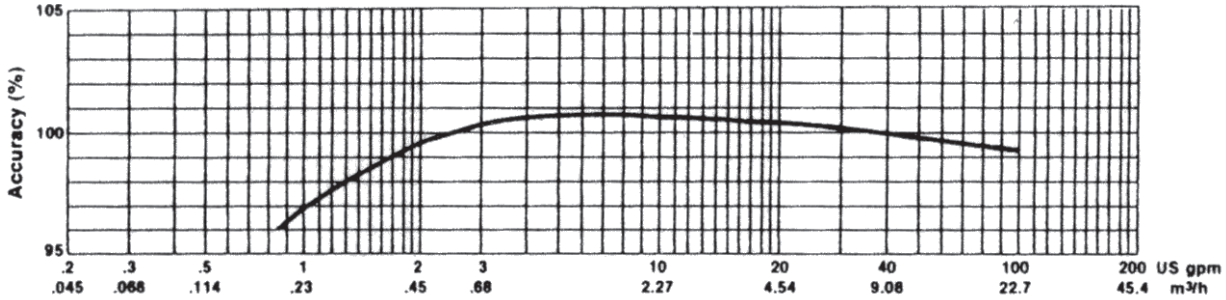
Lead Free Maincase

- Made from lead free, high-copper alloy
- NSF/ANSI 61 Certified
- NSF/ANSI 372 Certified
- Lifetime guarantee
- Resists internal pressure stresses and external damage
- Handles in-line piping variations and stresses
- Lead free, high-copper alloy provides residual value vs. plastic
- Electrical grounding continuity

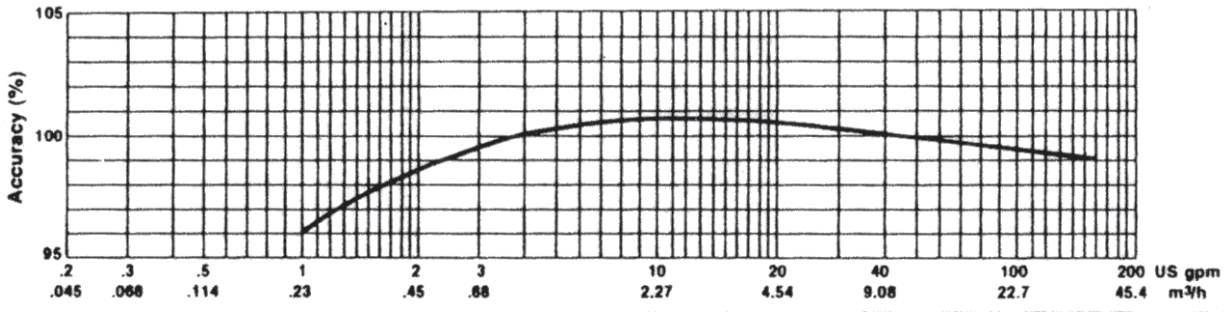
Nutating Disc Measuring Chamber

- Positive displacement
- Widest effective flow range for maximum revenue
- Proprietary polymer materials maximize long-term accuracy
- Floating chamber design is unaffected by meter position or in-line piping stresses

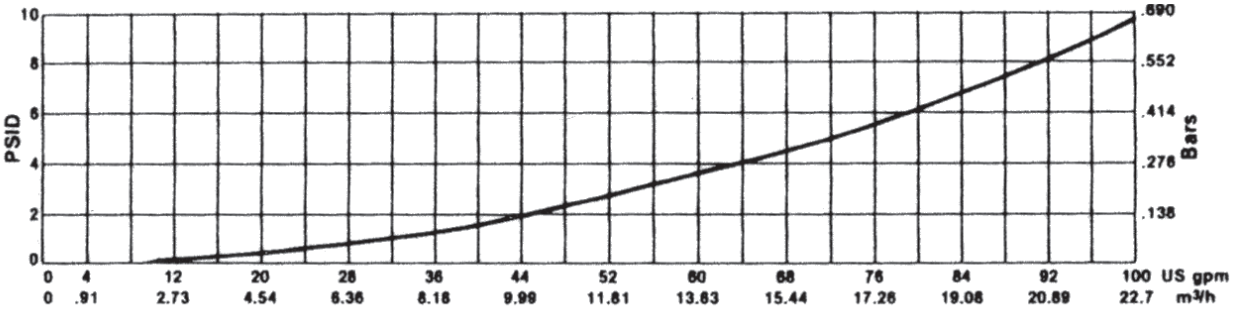
1 ½" Accuracy



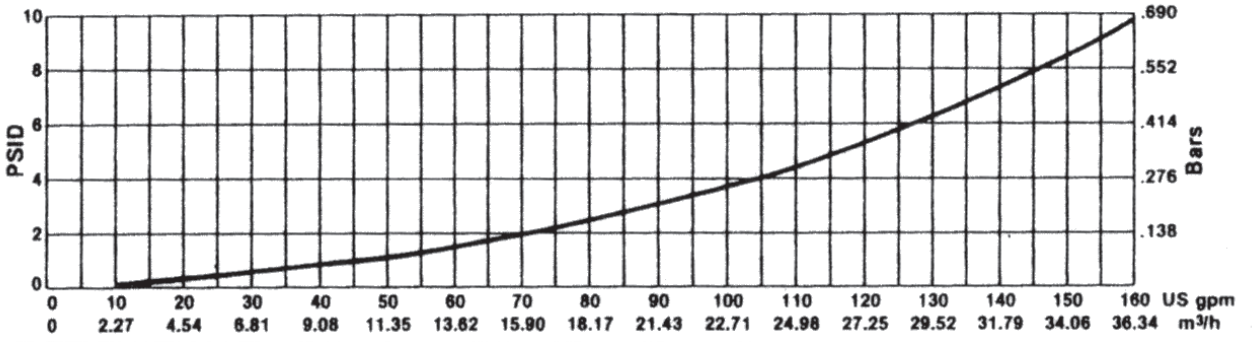
2" Accuracy



1 ½" Pressure Loss



2" Pressure Loss



These charts show typical meter performance. Individual results may vary.

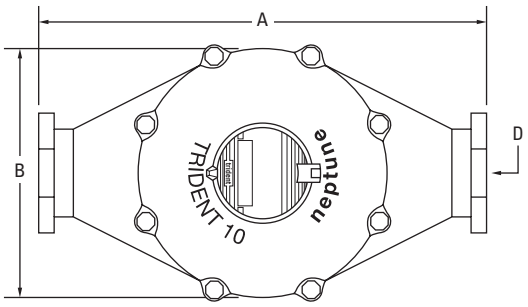
Operating Characteristics

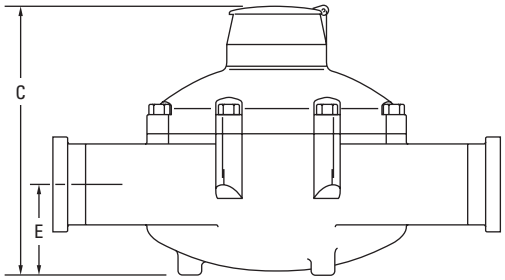
Meter Size	Normal Operating Range @100% Accuracy (±1.5%)	AWWA Standard	Low Flow @ 95% Accuracy
1 ½″	2 to 100 US gpm 0.46 to 22.73 m³/h	5 to 100 US gpm 1.1 to 22.7 m³/h	¾ US gpm 0.17 m³/h
2″	2 ½ to 160 US gpm 0.57 to 36.36 m³/h	8 to 160 US gpm 1.8 to 36.3 m³/h	1 US gpm 0.23 m³/h

Dimensions

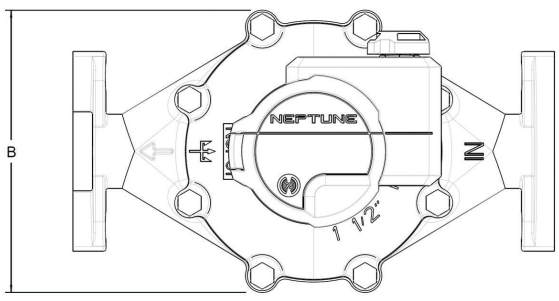
Meter Size	A in/mm	B in/mm	C-Std. in/mm	C-ARB in/mm	C- E-CODER®) R900*i*™ or ProCoder™) R900*i*™	D- Threads per inch	D- Thread Type	E in/mm	Weight lbs/kg
1 ½″ Screw End	12 ⅝ 321	8 1/16 205	8 ⅛ 206	8 13/16 220.3	8 ⅜ 213	11 ½	1 ½ NPT	2 9/16 65	31 14.1
1 ½″ Flanged End	13 330	8 1/16 205	8 ⅛ 206	8 13/16 220.3	8 ⅜ 213	—	—	2 9/16 65	35 15.9
2″ Screw End	15 ¼ 387	9 7/16 240	9 5/16 237	9 15/16 248.4	9 ½ 241	11 ½	2″ NPT	3 ⅛ 79	40 18.1
2″ Flanged End	17 432	9 7/16 240	9 5/16 237	9 15/16 248.4	9 ½ 241	—	—	3 ⅛ 79	44 20.0

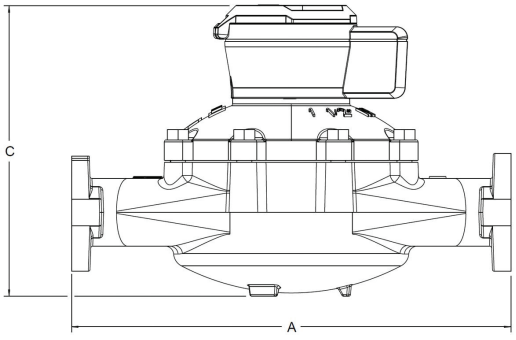
T-10 With Standard Register





T-10 With E-CODER®)R900*i*™ or ProCoder™)R900*i*™ Pit Register





Guaranteed Systems Compatibility

All T-10 meters are guaranteed adaptable to our ARB®V, ProRead™ (ARB VI), ProCoder™, E-CODER® (ARB VII), E-CODER®)R900*i*™,E-CODER®)R450*i*™, E-CODER®)L900*i*™, TRICON®/S, TRICON/E®3, and Neptune ARB® Utility Systems™ without removing the meter from service.

Specifications

Certification

- NSF/ANSI 61, NSF/ANSI 372

Application

- Cold water measurement of flow in one direction

Maximum Operating Water Pressure

- 150 psi (1,034 kPa)

Maximum Operating Water Temperature

- 80°F

Measuring Chamber

- Nutating disc technology design made from proprietary synthetic polymer

Registration

ProRead Registration (per sweep hand revolution)		**1 ½"**	**2"**
100	US Gallons	✓	✓
100	Imperial Gallons	✓	✓
10	Cubic Feet	✓	✓
1	Cubic Metre		✓
.01	Cubic Metre	✓	
Register Capacity ProRead, ProCoder, and E-CODER		**1 ½"**	**2"**
100,000,000	US Gallons	✓	✓
100,000,000	Imperial Gallons	✓	✓
10,000,000	Cubic Feet	✓	✓
100,000	Cubic Metres	✓*	
1,000,000	Cubic Metres	✓**	✓
E-CODER High Resolution (8-digit reading)		**1 ½"**	**2"**
1	US Gallons	✓	✓
1	Imperial Gallons	✓	✓
0.1	Cubic Feet	✓	✓
0.01	Cubic Metres		✓
0.001	Cubic Metres	✓	
ProCoder High Resolution (8-digit reading)		**1 ½"**	**2"**
1	US Gallons	✓	✓
1	Imperial Gallons	✓	✓
0.1	Cubic Feet	✓	✓
0.01	Cubic Metres	✓	✓

**ProRead and E-CODER only **ProCoder only*

Options

Sizes

- 1 ½" flanged or threaded end
- 2" flanged or threaded end

Units of Measure

- U.S. gallons, imperial gallons, cubic feet, cubic metres

Register Types

- Direct reading: Bronze box and cover
- Remote reading: ProRead Absolute Encoder, ProCoder, E-CODER, E-CODER)R900*i*, E-CODER)R450*i*, E-CODER)L900*i*, TRICON/S, TRICON/E3
- Reclaim

Measuring Chamber

- Synthetic polymer

Companion Flanges

- Lead free, high-copper alloy

Environmental Conditions

- Operating temperature: +33°F to +49°F (0°C to +65°C)
- Storage temperature:
- +33°F to +158°F (0°C to +70°C)

Test Ports

- 1" (optional)

NEPTUNE TECHNOLOGY GROUP

Be Confident with Sustained Accuracy Over Time

Neptune® MACH 10® Ultrasonic Meter

Because the Neptune® MACH 10® ultrasonic water meter has no internal parts that can wear over time, there is no opportunity for accuracy loss over the life of the meter. The MACH 10 combines solid state metrology with a corrosion-resistant, lead-free, high-copper alloy maincase, built to withstand demanding service conditions – internal water pressure, rough handling during installation, and in-line piping stresses.

- Sizes 1½ ” and 2”
- Extended low-flow range and accuracy
- No maintenance
- Accuracy sustained over meter life
- Advanced ultrasonic technology
- MACH 10®)R900*i*™ seamlessly integrates R900® radio for easy installation

NEPTUNE
TECHNOLOGY GROUP

Specifications

AWWA C750 compliant

AWWA C700, C701 performance compliant

NSF/ANSI 61 certified

Application

- Cold water measurement of flow in potable, combination potable-and-fire service, and reclaim/secondary water applications.

Maximum operating water pressure

- 175 psi

Operating water temperature range

- +33°F to +122°F (+0.5°C to +50°C)

Options

Sizes

- 1½"
- 2"

Units of measure

- U.S. gallons, Imperial gallons, cubic feet, cubic meters

Meter options

- Potable/fire service (combo or standalone meter service lines)
- Reclaim water

Environmental conditions

- Operating temperature: +14°F to +149°F (-10°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)

Warranty

- Neptune provides a limited warranty with respect to its MACH 10 line of ultrasonic meters for performance, materials, and workmanship.

AMR/AMI Compatibility

- All MACH 10 ultrasonic meters provide ProRead™, E-CODER® 8-digit, and E-CoderPLUS protocols to interface with Neptune and third-party AMR/AMI meter reading systems.

Operating Characteristics

Meter Size	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	Safe Maximum Operating Capacity	Extended Low Flow Accuracy (+/- 3.0%)
1½"	0.80 to 125 U.S. gpm	125 U.S. gpm	0.30 U.S. gpm
2"	1.50 to 160 U.S. gpm	160 U.S. gpm	0.50 U.S. gpm

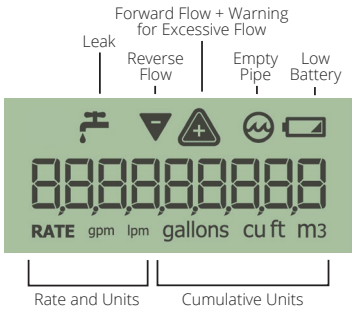
Dimensions

METER SIZE	LENGTH (L)		HEIGHT (H)		FLANGES
	IN	MM	IN	MM	
1½"	10", 13"	254, 330	6 7/32	158	OVAL
2"	10", 15.25", 17"	254, 387, 432	6 14/32	163.5	OVAL

Registration

High Resolution (8-digit reading)		1½"	2"
1	U.S. Gallons	√	√
1	Imperial Gallons	√	√
0.1	Cubic Feet	√	√
0.01	Cubic Meters	√	√

LCD DISPLAY



Superior Accuracy. Zero Maintenance.

Neptune® MACH 10® Ultrasonic Meter

The MACH 10® ultrasonic water meter features solid state ultrasonic technology including a factory-calibrated, replaceable unitized measuring element (UME) with no degradation of accuracy over time. Combined with a corrosion-resistant, lead free, high-copper alloy maincase, the MACH 10 is built to withstand demanding service conditions and deliver sustained accuracy over the life of the meter.

- Sizes 3” through 12”
- Advanced ultrasonic technology with easily replaceable UME design
- Accuracy sustained over meter life
- Can be installed in both horizontal and vertical applications
- Available in standard turbine and compound lay lengths
- Lead free, high-copper alloy maincase
- Open flow path design with low pressure loss
- UL Listed and FM Approved

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Specifications

AWWA C715 Compliant

NSF/ANSI 61 Certified

Application

- Cold water measurement of flow in potable, combination potable and fire service, and reclaim/secondary water applications.

Maximum Operating Water Pressure

- 175 psi

Operating Water Temperature Range

- Meets AWWA C-715 accuracy specifications for water temperatures from 33°F to 122°F (+0.5°C to 50°C).

Environmental Conditions

- Operating temperature: +14°F to +149°F (-10°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)

Options

Units of Measure

- U.S. gallons, cubic feet, cubic metres

Warranty

- Neptune provides a limited warranty for performance, materials, and workmanship. See warranty statement for details.

System Compatibility

- Compatible with Neptune R900® and CMIU. Also available as MACH 10®)R900*i*™ for an integrated radio solution and MACH 10®)TC for Sensus Touch Coupler compatibility.

Operating Characteristics

Meter Size	Extended Low Flow @ 100% Accuracy (+/- 3.0%)	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	Safe Maximum Operating Capacity	
			Standard	Fire Service
3″	0.50 U.S. gpm	0.75 to 500 U.S. gpm	500 U.S. gpm	420 U.S. gpm
4″	0.75 U.S. gpm	1.5 to 1250 U.S. gpm	1250 U.S. gpm	1100 U.S. gpm
6″	1.0 U.S. gpm	2.0 to 2000 U.S. gpm	2000 U.S. gpm	1800 U.S gpm
8″	2.5 U.S. gpm	4.0 to 4000 U.S. gpm	4000 gpm	TBD
10″	4.0 U.S. gpm	6.0 to 6500 U.S. gpm	6500 gpm	TBD
12″	5.0 U.S. gpm	8.0 to 8000 U.S. gpm	8000 gpm	TBD

Dimensions

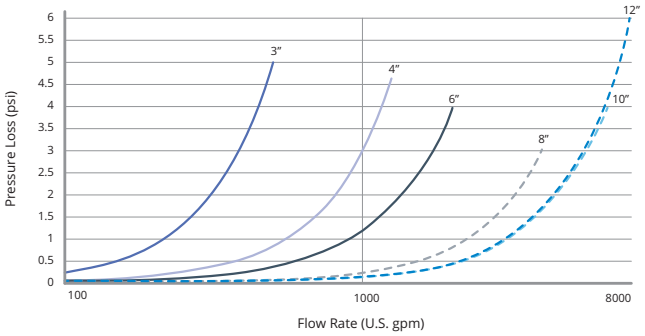
Meter Size	Length	Height	Weight
3″	12″	9½″	39 lbs
	17″	9½″	42 lbs
4″	14″	11″	51 lbs
	20″	11″	57 lbs
6″	18″	12¾″	79 lbs
	24″	12¾″	91 lbs
8″	20″	19″	165 lbs
10″	26″	21″	275 lbs
12″	19.7″	25″	300 lbs

Registration

High Resolution (8-digit reading)	3″	4″	6″	8″	10″	12″
1 U.S. Gallons	√	√				
10 U.S. Gallons			√	√	√	√
0.1 Cubic Feet	√	√				
1 Cubic Feet			√	√	√	√
0.01 Cubic Metres	√	√				
0.1 Cubic Metres			√	√	√	√

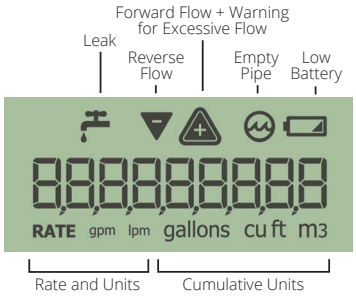
Pressure Loss

This chart shows typical meter performance. Individual results may vary. Pressure loss for sizes 8″, 10″, and 12″ is estimated.



LCD Display

9-digit display for extra resolution on manual reads.



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High Performance Turbine Meter

Neptune® High Performance (HP) Turbine water meters offer some of the widest flow ranges of any turbine meters on the market.

All HP Turbine water meters meet or exceed the latest performance and accuracy requirements of AWWA C701 and maximum continuous flow rates may be exceeded by as much as 25% for intermittent periods.

Construction

Each HP Turbine consists of a rugged, lead free, high-copper alloy maincase, an AWWA Class II turbine measuring element, and a roll-sealed register. The maincase is corrosion-resistant, lightweight, and compact. Inlet and outlet connections are flanged. Strainers are available to prevent debris from entering the meter and to reduce the effects of uneven water flow due to upstream piping variations.

The unitized measuring element (UME) allows for quick, easy, in-line interchangeability. Water volume is measured accurately at all flows by a specially-designed assembly. The hydrodynamically-balanced, thrust-compensated rotor relieves pressure on the thrust bearings to minimize wear and provide sustained accuracy over an extended operating life. Direct coupling of the rotor to the gear train eliminates revenue loss due to slippage during fast starts and line surges. A calibration vane allows in-field calibration of the UME to lengthen service life and to ensure accurate registration.

The roll-sealed register eliminates leaking and fogging. A magnetic drive couples the register with the measuring element.

Application

The HP Turbine water meter is designed for applications where flow rates are consistently moderate to high.

Systems Compatibility

Adaptability to all present and future systems for flexibility.

Warranty

Neptune provides a limited warranty with respect to its HP Turbine water meters for performance, materials, and workmanship.

When desired, owner maintenance is easily accomplished by in-line replacement of major components.

KEY FEATURES

Roll-Sealed Register

- Magnetic-driven, low-torque registration ensures accuracy
- Impact-resistant register design with flat glass for readability
- 1:1 ratio, low-flow indicator identifies leaks
- Bayonet mount allows in-line serviceability
- Tamperproof seal pin deters theft
- Date of manufacture, size, and model stamped on dial face

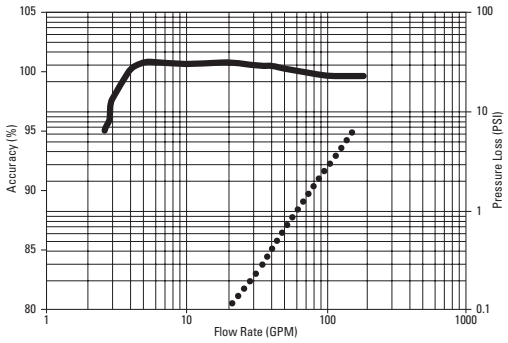
Lead Free Maincase

- Made from lead free, high-copper alloy
- NSF/ANSI 61 and 372 certified
- Compact design is lightweight and easy to handle
- Sturdy, durable, corrosion-resistant
- Resists internal pressure stresses and external damage
- Residual value

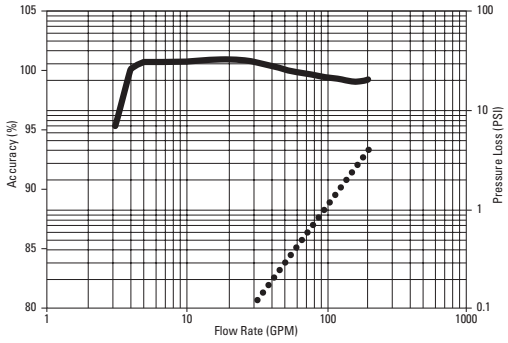
Turbine Measuring Element

- Excellent low-flow sensitivity and wide flow ranges available at 98.5% - 101.5% accuracy
- Direct coupling of rotor to gear train prevents slippage and ensures accurate registration
- Interchangeable measuring element allows for in-line service
- Hydrodynamically-balanced rotor
- Reusable O-ring gasket on 3” - 10” sizes

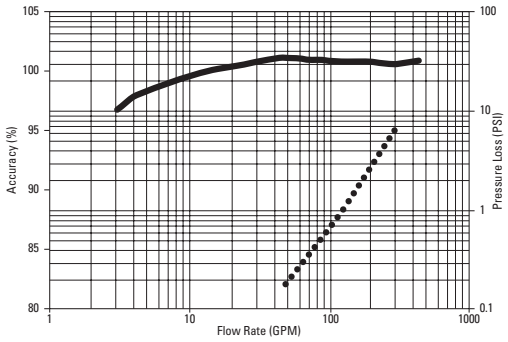
1½" Accuracy



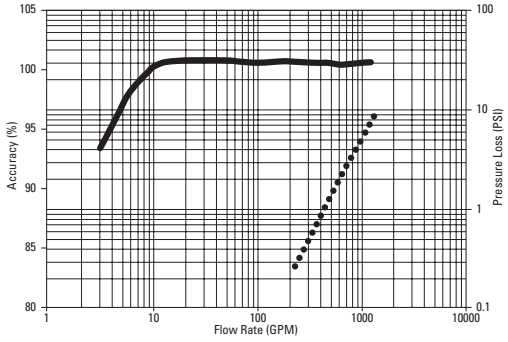
2" Accuracy



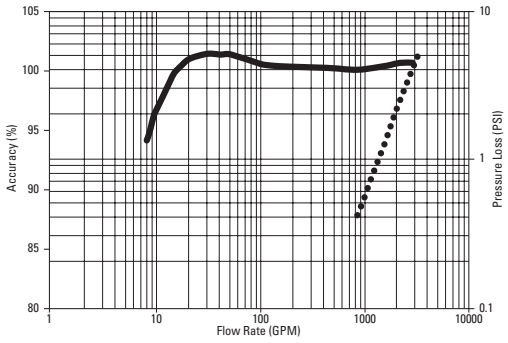
3" Accuracy



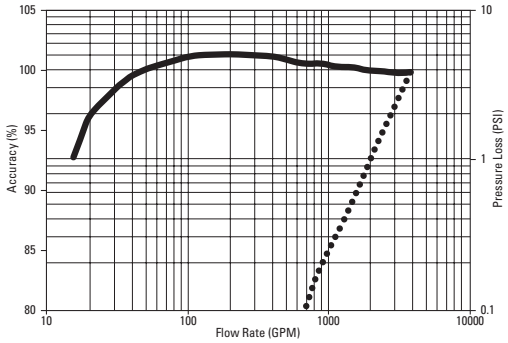
4" Accuracy



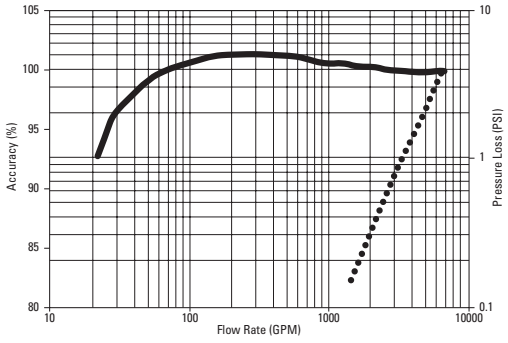
6" Accuracy



8" Accuracy



10" Accuracy



Accuracy

Head Loss

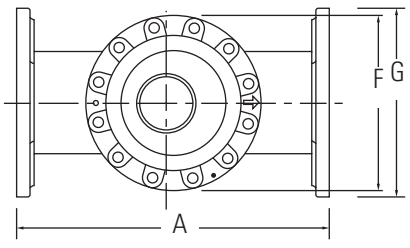
These charts show typical meter performance. Individual results may vary.

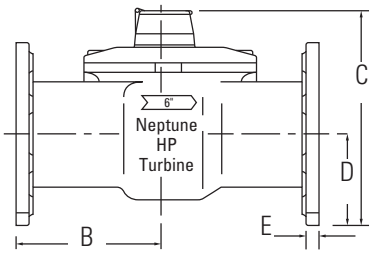
Operating Characteristics

Meter Size	Normal Operating Range @100% Accuracy (±1.5%)	Maximum Intermittent Flow	AWWA Standard
1½"	4 to 160 US gpm 0.91 to 36.3 m³/h	200 US gpm 45.4 m³/h	4 to 120 US gpm 0.91 to 27.3 m³/h
2"	4 to 200 US gpm 0.91 to 45.4 m³/h	250 US gpm 56.8 m³/h	4 to 190 US gpm 0.91 to 43.2 m³/h
3"	5 to 450 US gpm 1.14 to 102.2 m³/h	560 US gpm 127.2 m³/h	8 to 435 US gpm 1.8 to 98.8 m³/h
4"	10 to 1200 US gpm 2.27 to 272.5 m³/h	1500 US gpm 340.7 m³/h	15 to 750 US gpm 3.4 to 170.3 m³/h
6"	20 to 2500 US gpm 4.55 to 567.8 m³/h	3100 US gpm 704.1 m³/h	30 to 1350 US gpm 6.8 to 306.6 m³/h
8"	35 to 4000 US gpm 7.95 to 908.5 m³/h	5000 US gpm 1135.6 m³/h	50 to 2800 US gpm 11.4 to 635.9 m³/h
10"	50 to 6500 US gpm 11.36 to 1476.3 m³/h	8000 US gpm 1817 m³/h	75 to 4200 US gpm 17.0 to 953.9 m³/h

Dimensions

Meter Size	A	B	C-STD	C-ProRead™	C-E-CODER®)R900*i*™ and E-CODER®)R450*i*™	D	E	F	G	Weight
	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	lbs (kg)
1½"	10 (254)	6 1/2 (165)	7 1/8 (181)	7 9/16 (192)	7 3/4 (197)	1 3/4 (44)	3/4 (19)	4 1/2 (114)	5 3/8 (137)	19 (8.6)
2"	10 (254)	6 1/2 (165)	7 5/8 (194)	8 1/16 (204.8)	8 1/4 (210)	2 1/8 (54)	13/16 (21)	4 1/2 (114)	5 3/8 (137)	20 (9.1)
3"	12 (305)	6 (152)	10 (254)	10 7/16 (265.1)	10 5/8 (270)	3 3/4 (95)	5/8 (16)	6 1/4 (159)	7 1/2 (191)	40 (18.1)
4"	14 (356)	6 1/2 (165)	10 7/8 (276)	11 5/16 (287.3)	11 1/2 (292)	4 1/2 (114)	3/4 (19)	8 1/8 (206)	9 (229)	52 (23.6)
6"	18 (457)	8 5/8 (219)	13 (330)	13 7/16 (341.3)	13 5/8 (346)	5 1/2 (140)	1 (25)	10 1/4 (260)	11 (279)	115 (52.2)
8"	20 (508)	9 5/8 (244)	15 1/2 (394)	15 15/16 (404.8)	16 1/8 (409)	6 3/4 (171)	1 1/8 (29)	10 1/4 (260)	13 1/2 (343)	195 (88.4)
10"	26 (660)	12 5/8 (321)	15 1/2 (394)	15 15/16 (404.8)	16 1/8 (409)	8 (203)	1 1/4 (32)	10 1/4 (260)	16 (406)	275 (124.7)





Specifications

Application:

- Cold water measurement of flow in one direction

Maximum operating pressure:

- 175 psi (1206 kPa)

Maximum operating temperature:

- 80°F

Register:

- Direct reading, center-sweep, roll-sealed, magnetic drive with low-flow indicator

Measuring element:

- AWWA Class II Turbine, hydrodynamically-balanced rotor

Guaranteed Systems Compatibility

All HP Turbine water meters are guaranteed adaptable to our ARB® V, ProRead™ (ARB VI), ProCoder™, E-CODER®, E-CODER®)R900*i*™, E-CODER®)R450*i*™,E-CODER®)L900*i*™, TRICON®/S, TRICON/E®3, and Neptune meter reading systems without removing the meter from service.

Options

Sizes:

- 1½", 2", 3", 4", 6", 8", 10"

Units of measure:

- U.S. gallons, imperial gallons, cubic feet, cubic metres

Register Types:

- Remote reading systems*: ARB V, ProRead, ProCoder, E-CODER, E-CODER)R900*i*, E-CODER)R450*i*, E-CODER)L900*i*, TRICON/S, TRICON/E3

** Consult factory for meter performance specifications when fitted with ARB.*

- Reclaim

Companion flanges:

- 1½" and 2" (oval): bronze
- 3", 4", 6": bronze or cast iron
- 8" and 10": cast iron

Strainer:

- 1½"- 6" NSF/ANSI 61 lead free high copper alloy
- 1½"-10" NSF/ANSI 61 lead free Rilsan® nylon-coated ductile iron

Registration

Registration (per sweep hand revolution)		
	1½", 2", 3", 4"	6", 8", 10"
1,000 US Gallons		✓
1,000 Imperial Gallons		✓
100 US Gallons	✓	
100 Imperial Gallons	✓	
100 Cubic Feet		✓
10 Cubic Feet	✓	
10 Cubic Metres		✓
1 Cubic Metre	✓	

Register Capacity (6-wheel odometer)		
	1½", 2", 3", 4"	6", 8", 10"
1,000,000,000 US Gallons		✓
1,000,000,000 Imperial Gallons		✓
100,000,000 US Gallons	✓	
100,000,000 Imperial Gallons	✓	
100,000,000 Cubic Feet		✓
10,000,000 Cubic Feet	✓	
10,000,000 Cubic Metres		✓
1,000,000 Cubic Metres	✓	

NEPTUNE TECHNOLOGY GROUP

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

E-CODER®)R900*i*™

Protect And Expand Your Technology Investments

Neptune® designed the R900® System to make it easy for your utility – installation, everyday use, and expansion for the future without stranded assets. The E-CODER®)R900*i*™ combination absolute encoder register/ radio frequency meter interface unit (RF MIU) is a perfect example of all of the above. Not only does it work with past generations of meters and meter reading systems, but seamless integration is built into this single-unit end-point itself, providing two-way communications of advanced metering data. The E-CODER)R900*i*'s interleaved mobile and high-power fixed network messages allow for simple migration from mobile to fixed network reading without site visits or reprogramming.

Streamline Operations And Manage Resources

In addition to eliminating the need for programming, the E-CODER)R900*i* has no external wires, making installation easier, faster, and less costly; plus it reduces potential vandalism or tamper. As with the rest of the R900 System, the design of the unit is intuitive and user-friendly so that minimal training is required for operation. It's designed to help manage time, labor, and other resources. The radio frequency transmission of the E-CODER)R900*i* can save your utility significant amounts of time in terms of both meter reading and billing, and provide flexibility to reallocate personnel to different tasks or departments depending on your changing workforce needs.

Do More With Detailed, Actionable Data

The types of data your utility can generate through the E-CODER)R900*i* can take you far beyond a simple meter reading for a monthly bill. Hourly consumption profile information over an account's last 96 days, along with alerts for leak or backflow, help to proactively identify and resolve customer issues – heading off high bill complaints, reducing delinquent payments, and eliminating write-offs. Using Neptune® 360™ host software, your utility can leverage detailed data from the E-CODER)R900*i* to balance water produced versus water consumed, group accounts for District Metered Area analysis, and track and manage Non-Revenue Water. From increasing efficiencies to pinpointing possible tamper or water theft to aiding customer service, the data supplied by the E-CODER)R900*i* can help your utility make better, more confident decisions.

KEY BENEFITS

Facilitates Migration to AMI

- 1 Watt fixed network message reduces infrastructure costs
- Interleaved mobile and fixed network messages facilitate migration without changing the "modes" in the MIU

Reduces Non-Revenue Water

- Provides leak history/diagnostics
- Enables proactive leak notification
- Provides hourly consumption data
- Improves meter reading accuracy
- Eliminates estimated reads

Identifies Potential Theft

- Tamper detection
- Reverse flow detection
- Identifies significant periods of zero consumption

Simplifies Installation Process

- Easy to install/no programming required
- No external wires
- Reduces labor cost
- Reduces potential wire vandalism and damage

Technical Specifications

Electrical Specifications

- MIU power: Lithium battery with capacitor

Transmitter Specifications

- Two-way MIU
- Transmit period (interleaved mobile and fixed network messages):
  - Standard mobile message every 14 seconds at 100 mW
  - Standard fixed network message every 7½ minutes at 1 Watt
- FCC verification: Part 15.247:
  - Transmitter channels: 50; frequency-hopping, spread-spectrum
  - Channel frequency: 910 to 920 MHz
- Encoder register reading interval:
  - Every 15 minutes
- Data logging interval:
  - 96 days of hourly data

Environmental Conditions

- Operating temperature: -22°F to +149°F (-30°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)
- Operating humidity:
  - Inside set - 0 to 95%, condensing
  - Pit set - 100% submersible

Materials

- Register housing:
  - Inside set: plastic polycarbonate
  - Pit set: roll-sealed copper shell
- Lens:
  - Inside set: plastic
  - Pit set: glass

Antennas

- Standard internal antenna
- Optional through-the-lid antenna:
  - 18" Coax
  - 6' Coax
  - 20' Coax

Options

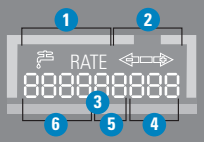
Compatibility

- Available for all sizes and makes of current Neptune meters
- Handhelds with R900® Belt Clip Transceiver - mobile RF
- MRX920™ - mobile RF
- R900® Gateways - fixed network RF

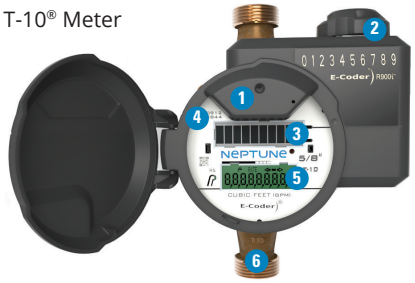
Units of Measure: U.S. Gallons, Cubic Feet, Imperial Gallons, Cubic Metres

Warranty

20 years (10/10); refer to specific Warranty Statement

	FLOW INDICATOR Shows the direction of flow through the meter: ON Water in use. OFF Water not in use. Flashing Water is running slowly. (-) Reverse flow. (+) Forward flow.
	LEAK INDICATOR Displays a possible leak: OFF No leak indicated. Flashing Intermittent leak indicates that water has been used for at least 50 of the 96 15-minute intervals during a 24-hour period. On Continuously Indicates water use for all 96 15-minute intervals during a 24-hour period.
RATE	RATE OF FLOW Average flow rate is displayed every twelve seconds on LCD display.
	LCD DISPLAY Nine-digit LCD displays the meter reading in billing units of measure: U.S. gallons, cubic feet, Imperial gallons, or cubic metres. 1 E-CODER basic reading/customary 6-digit remote reading 2 Customary sweep hand digits 3 E-CoderPLUS reading (8-digit remote reading) 4 Testing units used for diagnostics 5 Extended reading units 6 Customary billing units

1. Internal Antenna
2. Optional Antenna Port
3. Solar Panel
4. Date of Manufacture
5. LCD Display
6. T-10® Meter



NEPTUNE
TECHNOLOGY GROUP

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

R900® Gateway v4 Fixed Network Data Collector

Streamline Measurement and Boost Efficiency

Maximize the efficiency of your workforce – not only by automating meter reading but also by freeing up time for other tasks. Like the other components of Neptune's R900® System, the R900® Gateway fixed network data collector is designed for quick installation, ease of use, and flexibility. The R900 Gateway collects metering data as well as daily leak, reverse flow, and days of no flow alerts from all E-CODER®-equipped meters. The R900 Gateway's software-defined radio technology can process eight (8) meter readings simultaneously and gather 360 readings per second – optimizing your fixed network with high throughput reading performance; especially in high-density R900® deployments. The data you collect is accurate, timely, and simple to share with other departments – so you can turn it into meaningful information that will help identify hidden causes of loss and optimize efficiency.

Migrate Backward and Forward With Total Confidence

Get the most value from your current assets, both infrastructure and workforce, through Neptune® systems that allow you to migrate at your own pace from mobile automatic meter reading (AMR) to advanced metering infrastructure (AMI). Providing fixed network functionality, the R900 Gateway is easily integrated into the system with mobile methods of reading your existing R900 endpoints, so that you can choose the technology you need, where you need it – without a need for special programming or reprogramming of MIUs. The R900 Gateway supports the R900 System's 1 Watt fixed network message from endpoints, reducing infrastructure costs.

Resolve Customer Issues Proactively with Detailed Data

The R900 Gateway gives your utility simplified access to information that will help you identify and resolve water-related issues quickly and easily. You'll be able to track detailed hourly water consumption for individual accounts and receive alerts that will help you proactively improve service to your customers. Save them – and your utility – time and money, and inform customers of excessive water usage to head off high bill complaints, reduce delinquent payments, and eliminate write-offs.

KEY BENEFITS

Facilitates Migration to AMI

- Supports the 1 Watt fixed network message from R900 endpoints, reducing infrastructure costs
- Migrate at your own pace – your system can be read by any combination of mobile and fixed that you choose
- No reprogramming of endpoints required to migrate to fixed network reading

Simple Access to Powerful Data

- On-demand read capability – obtain a reading whenever you need it
- Daily leak, reverse flow, and days of no flow alerts from E-CODER-equipped meters

Improves Meter Reading Efficiency

- Software-defined radio (SDR) technology capable of processing eight (8) readings simultaneously
- Optimal performance in high-density R900 environments – capable of 360 readings per second

No Stranded Assets

- Maintains compatibility with existing R900s deployed
- Utilizing the power of our software-defined radio technology, all existing R900 Gateway v3 units can be easily updated to obtain R900 Gateway v4 functionality

Specifications

Receiver

- 910-920 MHz
- 50 channels
- Processes 8 readings simultaneously
- Processes 360 readings per second
- Capable of handling up to 25,000 R900s

Installation Options

- Rooftop
- Pole (2" – 16" diameter)
- Wall
- Water towers
- Street lights

Power Supplies

- 100-140 VAC
- 150W Solar
- 220W Solar

Battery Backup

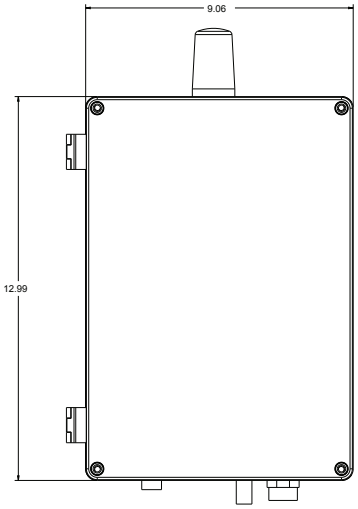
- AC version – UPS provides 8 hours battery backup
- Solar version – 3-day backup battery

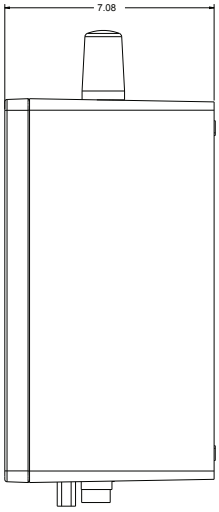
Backhaul Options

- Multi-carrier cellular modem
- EVDO Rev A (CDMA)
- 1xEVDO Rev 0 (CDMA)
- 1xRTT (CDMA)
- UMTS/HSPA (GSM)
- EDGE/GPRS (GSM)
- Ethernet
- Private LAN compatibility via Ethernet connection

Environmental

- NEMA 4X enclosure
- Operating temperature: -22°F to +140°F (-30°C to +60°C)
- Storage temperature: -40°F to +158°F (-40°C to +85°C)
- 0-95% non-condensing humidity





NEPTUNE TECHNOLOGY GROUP

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

R900® Belt Clip Transceiver

Automate Measurement to Activate Operational Efficiency

As part of the Neptune® R900® System, the R900® Belt Clip Transceiver (R900 BCT) is your utility personnel's partner in mobile meter reading and in-field customer support and is now iOS compatible.

The R900 BCT's two-way communications to the R900® MIU eliminate meter access issues and speed up retrieval of valuable data logging information – up to 96 days of historical hourly consumption data from an individual account. In addition, its exceptional radio frequency (RF) throughput reduces meter reading time, especially in high-density environments. Field personnel can even read R900s while performing maintenance or other tasks when taking advantage of the R900 BCT's unattended operations mode. These automated features ensure you collect accurate data that can be turned into meaningful information – to help improve accuracy, identify hidden causes of loss, and optimize the efficiency of your operations.

Move Ahead with Backward Compatibility and Forward Innovation

The R900 BCT, as with the rest of the Neptune R900 System, works with past generations of equipment while remaining flexible to incorporate innovations as needed. The R900 BCT maintains support to read previous generations of R900 MIUs yet introduces powerful software-defined radio (SDR) technology to support the new advanced two-way features of the R900 System. Now, the R900 BCT is capable of reading electric, bubble-up ERT® devices and processing SCM or SCM+ message files that these ERT devices transmit. This gives utilities the freedom of equipping with just the R900 BCT to read both water and electric meters.

So, go ahead and phase in new features and equipment at your own pace with confidence that Neptune will support your future needs without leaving you with stranded assets.

Present Consumption Data in the Field for Proactive Customer Service

Simplified access to critical information means your utility can provide even more proactive customer service. Pairing the R900 BCT with a handheld device or a mobile device running Neptune software, your personnel can maximize their efficiency in the field, with the flexibility to perform impromptu service calls and address customer service issues on-site without a separate truck roll[1]. With the data literally in hand, they can share data logging graph information with homeowners. This on-the-spot, on-site presentment of how much water they used and when, helps head off customer complaints regarding high water bills, reduce delinquencies, and avoid write-offs.

KEY BENEFITS

Increases meter reading efficiency

- Increased RF throughput capabilities which reduce reading time in high-density R900 environments
- Two-way communications to R900 MIU which reduces time required to retrieve data logging information
- Unattended operations mode allows utility personnel to read R900s while performing other non-meter-reading-related job functions

No stranded assets

- Compatible with all generations of R900 MIUs
- Probe compatibility with Advantage and Pocket ProReader
- Connects via Bluetooth to Trimble Nomad or Trimble Ranger for meter reading
- Connects via Bluetooth to Android or iOS mobile devices for in-field customer support
- Software-defined radio technology enables the R900 BCT to be updated for compatibility with future products

KEY BENEFITS CONTINUED

Reads ERT devices

- Compatible with Itron electric ERT technology (bubble-up ERTs only)
- Processes SCM and SCM+ message format

Analyze data at the source with either a smart phone or tablet

- Test-read R900s in the field or before installation to obtain reading and E-CODER® flag events
- Retrieve 96 days of hourly interval data logging information
- View graph of data logging intervals in the field
- Share data logging graph information with homeowner to address high bill complaints

[1]Contact Neptune Customer Support for the latest device and operating system compatibilities.

Specifications

Communication: Bluetooth 2.1 or later and USB

Handheld Software Compatibility: N_SIGHT® version 4.7 or later

Power Supply

- Rechargeable lithium-ion battery pack – 5000 mAh capacity
- Field-replaceable, recommended replacement every 2 years

Memory: 4GB SD card

Device Compatibility

- Trimble Nomad 900B/900LE/1050B/1050LE, Trimble Ranger 3, and Android/iOS mobile devices[1]

Indicators

- Four LEDs identify Bluetooth communication, RF status, mode status, and battery status

Dimensions

- Height: 3.58” (9.1 cm)
- Width: 1.66” (4.22 cm)
- Length: 5.75” (14.6 cm)

Weight: 1.1 lbs. (499g) including rechargeable battery

Temperature Range

- Operating: -4°F to +122°F (-20°C to +50°C)
- Storage: -40°F to +185°F (-40°C to +85°C)

Accessories

- Spare battery
- Spare battery charger
- Belt clip
- SD card
- 12V USB vehicle power cable

Warranty

- One-year comprehensive warranty
- Hardware maintenance contracts available

Receiver Channels: 50

Number of Simultaneous Channels: 8

Approvals

- FCC Class B
- IC

Mode Overview

	Normal	Unattended Operations	USB Mass Storage
Bluetooth Pairing to Devices	Required	N/A	No. Used for firmware updates and transfer of data via USB from SD card to Neptune software
Trimble Nomad 900B/900LE/ 1050B/1050LE Compatible	Yes	N/A	
iOS App Compatible	Yes	N/A	
Android App Compatible	Yes*	N/A	
R900 Compatible	Yes	Yes	
Advantage / Pocket ProReader Compatible	Yes	No	
Data Logging Compatible	Yes	No	
SD Card Data Storage	Yes	Yes	

**Advantage/Pocket ProReader and data logging not supported in Android NGO app.*

NEPTUNE TECHNOLOGY GROUP

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

MRX920™ Mobile Data Collector and MX900™ Software

Make Reading Success and Efficiency Automatic

Reliable, accurate, and field-proven, Neptune's MRX920™ mobile data collector – along with its MX900™ meter routes and mapping software – has helped water utilities across North America streamline, automate, and increase operational efficiencies. As part of Neptune's R900® System, the MRX920 helps transform data into actionable information that helps identify hidden causes of loss and optimize operational efficiency.

Strapped to the seat of your utility vehicle, the MRX920 reads up to fifty (50) meters simultaneously as your meter reader cruises down the streets. And in conjunction with the routes-integrated/Esri®-powered MX900 mapping, meter reading is automatic, fast, and effortless for your meter readers, accurate with less manpower deployed for your utility.

The MRX920 comes with Bluetooth capability, so your meter readers have the option of wirelessly updating routes and uploading the latest readings to the host system remotely and in near real-time without having to return to the office[1,2].

Additionally, Neptune has ported its well-established R900 radio frequency (RF) architecture to the latest release of MRX920 using software-defined radio (SDR) technology. This means all Neptune data collection systems have a common, core code base which translates to faster availability of new features and functionalities for your utility.

Make Migration to Other Technology Simple

The R900 System is designed to easily accommodate and support past generations of meters, encoder registers, and data collectors – while at the same time giving your utility the flexibility to incorporate future innovations as needed. The MRX920 is no exception, providing seamless compatibility with all generations of R900 MIUs. Its industry-leading performance can save days or even weeks for your meter reading routes, and new features within its MX900 software, such as Esri-powered mapping and wireless mobility, make valuable data available in real time as you read your system. Feel free to phase in these new features and equipment at your own pace, secure in the knowledge that Neptune will support your future needs without leaving you with stranded assets.

KEY BENEFITS

Reduced Meter Reading Time

- Reads up to fifty (50) meters simultaneously

Simple Access to Actionable Data

- Esri-powered GIS maps[1] show meter reading and flag status
- Wireless mobility – communicate meter reading data back to N_SIGHT® in real time[1]
- User-configurable advanced filtering shows you only the information you need
- Data logging and off-cycle reads without physical access to the meters

Analyze Data at the Source

- View data logging graphs in the field and share with homeowner to address high bill complaints
- Identify high/low audit status failures
- Receive leak, reverse flow, and days of no flow alerts from E-CODER®-equipped meters

[1] *Optional MX900™ Mapping and Mobility module required. Mobile computing device recommended and not included.*
[2] *Cellular or Internet connection required.*

Save Your Utility – and Your Customers – Time and Money

While the R900 System always allows your utility to migrate forward to implement fixed network data collectors, or backward to use RF technology for individual off-cycle readings or data logging, using the MRX920 and MX900 software as a part of your system makes for fast and simple access to information that can provide effective resolutions to customers' water-related issues. With detailed consumption data in hand while working in the field, along with proactive alerts of leaks and backflow conditions, you can enhance customer service. In the process, you can even preempt high bill complaints, reduce delinquent payments, and eliminate write-offs.

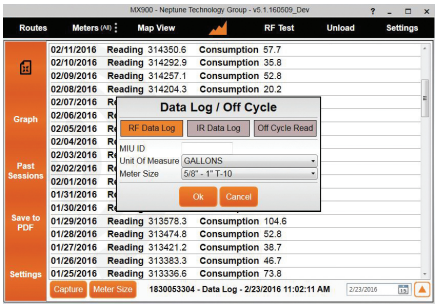
Specifications

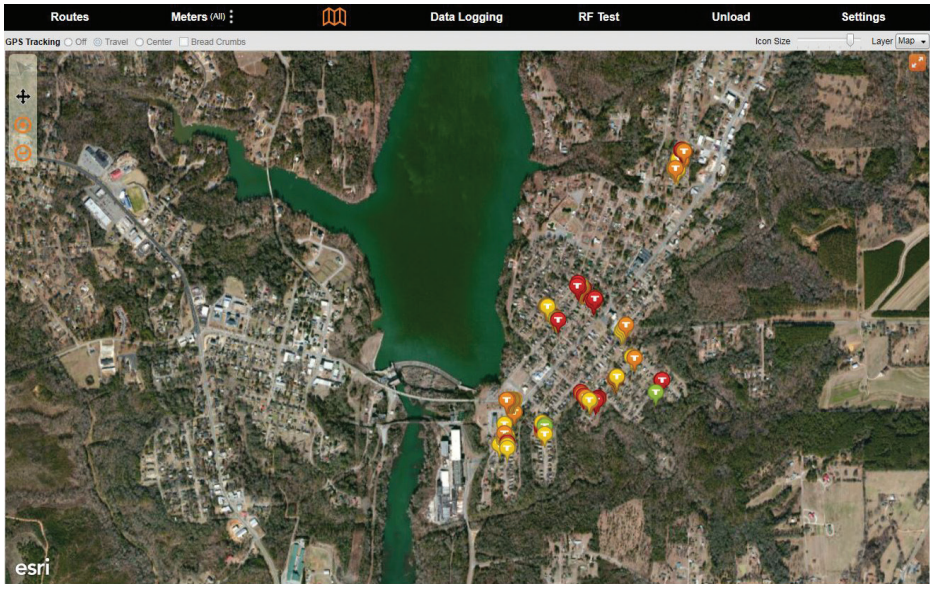
Physical Specifications

- Dimensions:
  8" (width) x 3.15" (height) x 11" (length excluding connections and handle)
- Weight: ~5 lbs

Electrical Specifications

- Power consumption: < 1A
- Power supply: 12V DC via vehicle power source adapter





Neptune recommends the following mobile computing hardware specifications for optimal performance:

- 12.1" XGA (800 x 600) minimum
- 89-key keyboard
- Operating System:
  - Windows® 7 Professional 32 & 64
  - Windows® 8 Professional 32 & 64
  - Windows® 8.1 Professional 64
  - Windows® 10 Professional 64
- .Net Framework 4.5 or higher
- Processor: Intel Pentium 1.7 Ghz or faster processor
- Memory: 1 GB minimum
- Communication
  - Internal 802.11 b/g wireless LAN
  - Windows Wireless Connection Manager (if Bluetooth connection to the receiver is desired, Bluetooth v2.1 + EDR required)
- USB 2.0
- GPS receiver (required for the mapping and mobility module)
- Minimum of 2 GB of available hard drive space

Environmental Conditions

- Operating temperature:
  -4°F to +122°F (-20°C to +50°C)
- Storage temperature:
  -40°F to +185°F (-40°C to +85°C)
- Operating humidity: 5 to 95% non-condensing relative humidity

NEPTUNE TECHNOLOGY GROUP

AMI Your Way

Neptune® R900® System: Cellular Endpoint

Neptune's cellular endpoint allows you to progress at your own pace to AMI when integrated into your Neptune® R900® System. Neptune's cellular endpoint provides all of the benefits of an advanced meter reading solution without the operational burden of network infrastructure while allowing you to protect existing asset investments. An easily deployable AMI solution, the cellular endpoint allows you to start collecting actionable meter data immediately. Powered by the FirstNet® cellular network, you are assured a reliable, highly secure, and easy-to-deploy AMI data solution for both current and future needs.

- No AMI fixed network infrastructure installation, maintenance, operations, or upgrade costs for the life of the deployment.
- Seamless integrations with existing R900 technology for a flexible AMI solution.
- Access all of your meter data from anywhere at any time with Neptune® 360™.
- Improve operations and customer service with real-time, high-resolution AMI data and advanced analytics.
- Automatically recover from network outages with 96 days of stored data.

FirstNet®, Built with AT&T

- Two-way solution using the FirstNet® LTE-M cellular technology helps ensure robust coverage.
- Prioritized connectivity, even during natural disasters, protects against commercial traffic congestion.
- Network resources and mobile cell sites can be dispatched during disaster recovery to support network connectivity.
- Sensitive information is highly secure on the FirstNet® network.

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Specifications

Environmental Conditions

- Operating temperature: -22°F to +149°F (-30°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)
- Operating humidity: 100% condensing

Antennas

- Wall: standard internal antenna
- Pit: internal or external antenna

Encoded Register Compatibility

- Neptune® MACH 10®, ARB®V, ProRead™, E-CODER®, and ProCoder™
- Sensus ECR II, ICE, iPerl, Electronic Register and OMNI
- Hersey/Mueller Translator
- Badger ADE, HR E|LCD, E-Series
- Elster/AMCO InVision (Sensus protocol version)

Operation

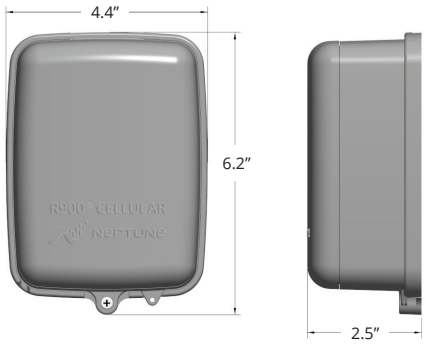
- Four cellular LTE-M transmissions per day
- Mobile 900 MHz backup transmissions
- Verify installation via the cellular endpoint manager tool
- 15-minute interval data with automatic back-fill
- Priority alerts
- Configurable transmission windows

Warranty

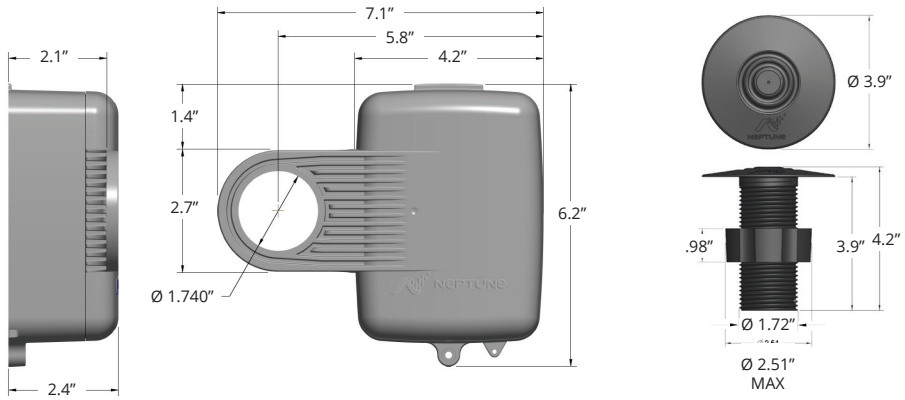
- Neptune provides a limited warranty for performance, materials, and workmanship. See warranty statement for details.

Dimensions

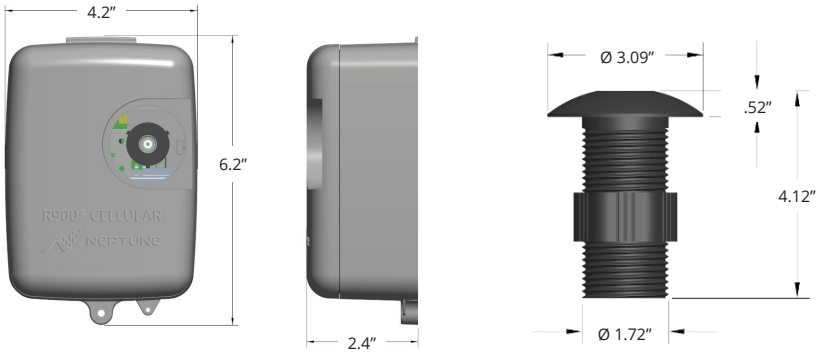
Wall Endpoint



Pit Endpoint (Internal Antenna)



Pit Endpoint with External Through-the-Lid Antenna



R900® Endpoint - Cellular

What is the R900® endpoint - cellular?

The R900 endpoint is a meter interface unit that utilizes a cellular network to transmit data to Neptune® 360™. A network infrastructure is not required, eliminating the operational and capital burden that can come with having a traditional RF fixed network. The cellular endpoint supports targeted or full-scale deployments, providing a solution that can be tailored to each utility's unique needs.

What cellular network supports the R900 endpoint?

The R900 endpoint is supported by the FirstNet® cellular network to ensure robust coverage and secure, reliable delivery of AMI data.

What is FirstNet?

FirstNet is the nationwide public safety broadband network built with and for First Responders (Primary) and those who support them (Extended Primary). Water utilities and their suppliers, such as Neptune Technology Group, are classified as Extended Primary.

What are the benefits of FirstNet?

FirstNet data is routed through a separate, core network apart from commercial traffic allowing for:

- Data prioritization over commercial traffic
- Enhanced cybersecurity
- Protection from network congestion

FirstNet also provides augmented coverage with dedicated network resources and mobile cellular units that can be dispatched during disaster recovery to support agencies and organizations on FirstNet.

How do I know whether I have FirstNet service in my area?

A coverage map can be used to identify service locations and is available on the FirstNet website: https://www.firstnet.com/coverage.html.

Does the R900 endpoint require any programming?

No, the cellular endpoint auto-detects the type of encoded register it is connected to and only requires a magnet swipe along the endpoint housing to be activated.

With what encoder registers will the R900 endpoint function?

The cellular endpoint is compatible with the following encoder registers: Neptune® ARB® V, ProRead™, ProCoder™, E-CODER®, MACH 10®, KROHNE WATERFLUX 3070, Sensus (Invensys) ECR II, ECR III, ICE, iPerl, Electronic Register, OMNI, Hersey/Mueller Translator, Badger ADE, HR E|LCD, E-Series.

Please refer to the latest product sheet for any updates to the compatibility list.

If I change the register attached to the R900 endpoint do I need to wait to get an updated reading?

No, magnet swiping the endpoint will force it to interrogate the register and initiate network transmits of the data. Any subsequent readings after the magnet swipe will contain the latest reading from the new register.

How often is data sent from the endpoint to Neptune 360?

The endpoint interrogates the meter register every 15 minutes. This data is stored in the endpoint data log and is transmitted via the FirstNet network to Neptune 360 four times a day/once every six hours.

Does the R900 endpoint support a local data unload of the endpoints data log?

No, the endpoint does not support a local data log unload. Instead, usage profile information can be accessed remotely from Neptune 360. Additionally, the R900 endpoint stores up to 96 days of data to backfill readings into Neptune 360 in the event of a cellular network interruption. Once communication is restored, any readings that are stored and have not been transmitted will be queued and transferred via the cellular network, so that there are no missed readings.

Does the R900 endpoint support mobile messages?

Yes, the endpoint will transmit a mobile message every 30 seconds after 72 consecutive hours of unsuccessful cellular transmission. After a successful cellular transmission, the endpoint will stop transmitting the mobile message every 30 seconds.

How is the R900 endpoint activated?

The endpoint is shipped in a “sleep” mode and requires a magnet swipe along the top left corner to activate and begin transmitting meter reading data.

Is the battery replaceable on the cellular endpoint?

No, the R900 endpoint is fully potted for field reliability and there is no mechanism for field replacement of the battery.

How can I distinguish the R900 endpoint - cellular from other R900 endpoints?

The cellular endpoint can be distinguished from other R900 endpoints in the following ways:

- Pit units with an internal antenna have a distinct mounting arm with a circular hole through it that extends from the side of the endpoint’s housing.
- Wall units and pit units with an external antenna have “R900 CELLULAR” printed on the cover of the unit.
- The label on the endpoint housing for all units includes “R900 cellular endpoint” along with a black box that indicates it is FirstNet enabled.

Can the R900 endpoint be connected to two separate encoded registers?

No, the R900 endpoint does not support networking and can only be connected to a single encoded register.

How do I verify that the R900 endpoint is connected to the cellular network once installed?

Connectivity can be verified by using the Neptune® 360™ Field Manager app. The Field Manager app will display information regarding the endpoint’s cellular network status and meter reading from the connected register. This displayed information can be used to verify that you have properly wired the endpoint to the register along with a verification of cellular signal strength at the installation location.

How do I download and install the Field Manager to my iOS or Android device?

Contact Neptune Customer Support to obtain a license key and directions for installing the application to your device.

Is the Field Manager app required for installation?

No, the Field Manager app is not required for endpoint installation, but it is useful to verify a valid meter reading and good cellular network connectivity at the installation location.

Why is the R900 endpoint transmitting all colons (::::::::)?

The endpoint is not detecting an encoder register. Check all wiring connections and magnet swipe the endpoint to force a register interrogation.

What head-end software is supported by the R900 endpoint?

The cellular endpoint is supported by Neptune 360 only.

Does the R900 endpoint support remote firmware updates?

Yes, the endpoint supports remote firmware upgrades, initiated from Neptune 360, for future enhancements and bug-fixes.

Neptune® 360™ Data Management Platform

A Product of Neptune Technology Group

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Turn Information into Action

Data is just data unless you can use it effectively. To go beyond basic meter reading and billing, your utility needs tools that provide a deeper understanding of the data you collect to turn it into meaningful information for a Smart Water Network. The Neptune® 360™ data management platform was designed to provide as much data as your utility needs, while helping you make sense of it all — empowering faster, more informed decisions. Analyze data quickly and easily with software tailored for the needs of water utilities.

Putting Your Data in View

Having the data is one thing, seeing the data and making sense of it is another. Neptune 360 delivers an intuitive, user-friendly design, making the data clear and easy to interpret. Examining your entire AMI network using system-wide Key Performance Indicators and geographical views assists with identifying areas of concern and finding ways to maximize operational efficiencies.

Quickly access a dashboard view of your largest water consumers, providing you with information needed to take action. Analysis of individual trends and usage patterns helps resolve customer service calls with confidence. Detailed reporting of consumption activity, potential leaks, and reverse flow will keep you ahead of issues that could impact your utility's revenue.

Lift Your IT Burden with a Cloud-Based Solution

Boost utility efficiency with Neptune 360 delivered as a service. No longer install servers or perform upgrades. All that is needed is an Internet browser. Just log on to access anywhere at any time.

A True Sense of Security

Ease your security concerns and stay focused on the business of water. Continuously-monitored Neptune 360 operates from a world-class data center, providing the highest level of security, redundancy, and disaster recovery services.

Share Information Across the Smart Water Network

Your management, maintenance, customer service, water quality, and other departments all need fast, easy access to information. Share and leverage actionable data captured by Neptune 360, empowering collaboration and helping predict impacts on your utility. The platform seamlessly integrates meter data, event data, and alerts directly with third party work order systems, customer portals, hydraulic modeling applications, and other systems through Application Programming Interfaces (APIs).

An Application that Grows as You Grow

From mobile meter reading today, to moving to an AMI network tomorrow, the same software platform is utilized. Apply trend analysis in rate structure planning and usage initiatives. The modular-based platform makes it easy to turn on new features as your needs evolve, bringing you critical data to proactively plan for tomorrow.

Trust the Data

Data accuracy and dependability matter. By implementing the highest-level architecture, Neptune ensures data integrity with processes and tools to maintain quality from the meter to the platform as part of routine business operation.

NEPTUNE 360™

Analyze and share meaningful data with a platform that empowers utilities. Actionable insights help you achieve your goals and objectives.

METERS MATTER

Stream critical actionable data right into Neptune® 360™.

WALK-BY DATA

Sync collected data easily.

FUTURE PROOF AMI

Connect AMI network data.

MOBILE

Incorporate mobile data collection.

BRING YOUR OWN DEVICE

Eliminate specialized devices and communicate efficiently.

THIRD PARTY SOFTWARE

Link data with third party applications (such as CIS and ESRI).

CUSTOMER RELATIONSHIPS

Streamline utility data management and provide exceptional customer service.

+ ACT QUICKLY
+ PLAN FOR THE FUTURE
+ MANAGE GROWTH

Neptune® 360™ Benefits

- Neptune-managed system with no installation required
- Cloud-based solution in a world-class data center with the highest level of security and disaster recovery/redundancy
- 24/7 software system monitoring
- Retain data ownership in a system designed exclusively for water utilities
- Integrate and access Data Analytics across departments — helping your utility achieve goals and objectives
- Identify potential leaks, excessive consumption, and reverse flow to proactively resolve issues faster
- Migrate easily from mobile to fixed network
- Aid Non-Revenue Water reduction, conservation, and rate planning
- A single platform across devices that can be accessed anywhere at any time

Specifications

Neptune 360

- Google Chrome and Microsoft Edge web browsers supported
- When using touch screen monitors, Neptune recommends Microsoft Edge web browser for optimal viewing and performance

Neptune 360 Mobile

- Neptune 360 Mobile supports Android, iPhone, and iPad devices running the following operating systems:
  - Android: 5.1.X Lollipop, 6.0.X Marshmallow, 7.0.X Nougat, 7.1.X Nougat, 8.1.X Oreo
  - iOS: 10.3.1 and higher, 11

Bring Your Own Device to Field Operations

Save money and time with Neptune 360 Mobile — use your utility's existing Android or iOS cell phones or tablet devices to perform meter reading. Pair with an R900® Belt Clip Transceiver or MRX920™ Mobile Data Collector and expand your field device options when performing re-reads, reading monthly routes or even responding to high water bill complaints.

96

days of hourly historical consumption

Neptune 360 Mobile provides direct communication via wireless from the field without the need to bring your mobile device back into the office, yielding data on demand for more efficient customer service. Other application capabilities include RF Test, Off-Cycle Read, and Data Log to capture 96 days of hourly historical consumption — addressing customer issues faster.

WARRANTY SHEETS

A NEPTUNE TECHNOLOGY GROUP WARRANTY STATEMENT

Neptune T-10®, HP Turbine, TRU/FLO® Compound Cold Water Meters

1. TERMS OF LIMITED WARRANTY

With respect to its Neptune T-10®, HP TURBINE, TRU/FLO® Compound Water Meters (collectively the "Water Meters"), Neptune Technology Group Inc. ("Neptune") warrants the following on meters sold on or after 11/1/92:

The Water Meters will be, at the later of (i) the date of original purchase from Neptune or (ii) the date of original shipment from Neptune-authorized distributor of Water Meters (that later date is referred to as "the Date of Shipment") and will remain for a period of eighteen (18) months from the Date of Shipment, or twelve (12) months from date of installation, whichever comes first, free from manufacturing defects in workmanship and material.

(a) Maincase. The no-lead high copper alloy or Brass maincase of the Water Meters will be at the Date of Shipment free from manufacturing defects in workmanship and material for the life of the Water Meter.

(b) Frost Protection. All Neptune T-10 Cold Water Meters shipped with a synthetic polymer or cast-iron bottom cap will, commencing upon the Date of Shipment, be warranted against chamber damage for a period of ten (10) years.

(c) Registers. Standard, roll sealed registers of the Water Meters will be at the Date of Shipment, and shall remain for the following periods, free from manufacturing defects in workmanship and material for a period of ten (10) years. The ARB®, ProRead™ (ARB VI), E-CODER® (ARB VII), and ProCoder™ system registers are warranted for ten (10) years from Date of Shipment. All ProRead encoder receptacles shipped after January 1, 2001, shall be warranted for five years from the Date of Shipment. All other components and parts are covered under Neptune's standard one-year material and workmanship guarantee.

(d) Meter Accuracy for Neptune T-10. Neptune T-10 Meters and Neptune T-10 nutating disc chambers in TRU/FLO Compound Water Meters are warranted to meet or exceed, as listed herein, accuracy standards of the AWWA Standard C700-95 for a period of: (i) five (5) years from Date of Shipment for 5/8", 3/4" and 1" meters; (ii) for a period of two (2) years from the Date of Shipment for 1 1/2" and 2" meters; or (iii) the applicable registration shown below, whichever occurs first. Neptune further guarantees that the Neptune T-10 and Neptune T-10 nutating disc chambers in TRU/FLO Compound Water Meters will perform to at least Repaired Meter Accuracy Standards, according to AWWA Manual M-6 Chapter 5 (1999) Table 5.3 for an additional ten (10) years or the registration shown below, whichever occurs first.

SIZE	EXTENDED LOW FLOW ACCURACY	NEW METER ACCURACY	REPAIRED METER ACCURACY
⅝ & ⅝" x ¾"	⅛ US gpm @ 95% 5 years or 500,000 gallons	500,000 gallons	1,500,000 gallons
¾"	¼ US gpm @ 95% 5 years or 750,000 gallons	750,000 gallons	2,250,000 gallons
1"	⅜ US gpm @ 95% 5 years or 1,000,000 gallons	1,000,000 gallons	3,000,000 gallons
1 ½"	¾ US gpm@ 95% 2 years or 1,600,000 gallons	1,600,000 gallons	5,000,000 gallons
2"	1 US gpm @ 95% 2 years or 2,700,000 gallons	2,700,000 gallons	8,000,000 gallons

(e) Meter Accuracy for HP Turbine and TRU/FLO. The HP Turbine and TRU/FLO Compound Cold Water Meters will perform, for a period of one (1) year from the Date of Shipment, to American Water Works Association ("AWWA") accuracy standards for new water meters.

2. WARRANTY RETURN

If a Neptune Water Meter fails an accuracy test during an applicable warranty period, it may be returned to Neptune for repair or replacement at Neptune's option. An accuracy test shall be conducted by the customer according to AWWA standards. Any meter being returned for repair to Neptune under this performance guarantee must be returned with a copy of the customer's test results. If the meter is returned to Neptune without a copy of the test results or if Neptune's factory test shows the meter to meet current AWWA standards, the customer will be charged a nominal testing fee by Neptune in such cases. Neptune will repair or replace the meter at Neptune's option after the meter has been tested by Neptune. Meters repaired or replaced under the performance guarantee will be guaranteed to perform to AWWA repaired meter accuracy standards.

3. WARRANTIES ARE EXCLUSIVE

The warranties set forth in this certificate of warranty are in lieu of any other warranty, guarantee, or representation, whether expressed or implied, including without limitation, the warranty of merchantability and the warranty of fitness for a particular purpose.

4. DAMAGES LIMITED TO COSTS OF REPLACEMENT AND REPAIR

If the Water Meter fails to meet the warranties set forth in Paragraph 1 of this Certificate of Warranty, Neptune, at its option shall, without charge of labor or materials, repair or replace the Water Meter or part thereof, provided that (a) the Water Meter is delivered to a Neptune representative, (b) the Water Meter is accompanied by a Return Material Authorization (RMA), and (c) all costs of delivery to Neptune are assumed by the purchaser of the Water Meter. Neptune's liability is limited to its costs of replacement and repair of the defective water meter. Damages resulting from miscalculation of water usage or lost revenue or profit are not recoverable from Neptune. It is the responsibility of the customer to periodically verify the operation and accuracy of its meters.

5. WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS

The warranties set forth in this Certificate of Warranty do not apply to any Water Meter that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the Water Meter's ability of performance, including but not limited to: misuse; improper handling, application or installation; excessive operating conditions; foreign materials in the water; aggressive water conditions; tampering or unauthorized repairs or modifications; accidental or intentional damage; acts of God. This Certificate of Warranty shall not apply if product is placed in non-recommended installation, is connected or altered by other than Neptune recommended procedures, is used with other than genuine Neptune meter registers and components, or read by equipment not approved or licensed by Neptune. Neptune makes no claims concerning operability and/or compatibility or third party reading systems. In addition, this Certificate of Warranty shall not apply if third party reading equipment is believed to have caused damage to the meter or register. In order to determine its liability, if any, under this Certificate of Warranty, Neptune shall have the right to inspect any Water Meter or part thereof that is claimed to be defective at Neptune or other location designated by Neptune.

NEPTUNE'S LIABILITY WITH RESPECT TO BREACHES OF THE FOREGOING LIMITED WARRANTY SHALL BE LIMITED AS STATED HEREIN. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACT OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

A NEPTUNE TECHNOLOGY GROUP WARRANTY STATEMENT

E-CODER®)R900*i* ™

1. WARRANTY EFFECTIVE DATE
This warranty will be effective for any E-CODER®)R900*i*™ that has shipped since product introduction.

2. E-CODER)R900*i*
Neptune Technology Group Inc. warrants that the E-CODER)R900*i* (which includes a Neptune®-supplied battery that is not intended to be removable or replaceable) shall be free from defects in manufacture and design for a period of twenty (20) years from the "Date of Shipment" (such period being the "Warranty Period"). Neptune shall not be responsible for any defects in the E-CODER)R900*i* (whether due to design, materials, manufacture, or otherwise) which manifest themselves after the expiration of the Warranty Period. Neptune will repair or replace a non-performing E-CODER)R900*i* free of charge for the first ten (10) years and at a discount off of the then-current contract price or the then-current list price, whichever is less, during the remaining ten (10) years according to the discount schedule at the right.

Year of Failure	E-CODER)R900*i*
	Replacement Price Discount*
1-10	Full replacement: 100%
11	50%
12	50%
13	40%
14	40%
15	30%
16	30%
17	20%
18	20%
19	10%
20	10%

* Replacement price discount percentages will be applied towards then-current contract prices or then-current list prices, whichever is less, in effect for the year product is accepted by Neptune under warranty conditions. Replacement E-CODER)R900*i* registers are warranted for one (1) year after date of shipment or balance of original E-CODER)R900*i* warranty, whichever is greater.

3. WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS.
This warranty does not include field replacement labor or materials costs, which are the responsibility of the utility. This warranty does not apply if product is placed in non-recommended installations; may have been repaired with parts not recommended by Neptune; converted, altered, or connected by other than Neptune recommended procedures; is used with other than genuine Neptune meter registers and components or read by equipment not approved or licensed by Neptune; or damaged due to improper care or maintenance, or improper periodic testing (please refer to E-CODER)R900*i* Installation and Maintenance Guide). This warranty does not apply to any E-CODER)R900*i* that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the ECODER)R900*i* register's ability of performance, including but not limited to: misuse; improper handling; application or installation; excessive operating conditions; tampering or unauthorized repairs and modifications; accidental or intentional damage; or acts of God. In no event shall Neptune be liable for special, incidental, indirect, or consequential damages, including, without limitation, lost revenue.

THE ABOVE WARRANTY FOR THE E-CODER)R900*i* IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY NEPTUNE WITH RESPECT TO THE E-CODER)R900*i*. ALL OTHER WARRANTIES, CONDITIONS, TERMS, REPRESENTATIONS, OR OTHER LEGALLY OPERATIVE PROVISIONS CONCERNING THE E-CODER)R900*i* ARE HEREBY EXPRESSLY EXCLUDED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY, CONDITION, TERM, AND REPRESENTATION OR OTHER LEGALLY OPERATIVE PROVISION AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS PARAGRAPH IS EXPRESSLY INTENDED TO EXCLUDE FROM THIS CONTRACT ALL STATUTORY AND COMMON LAW WARRANTIES TO THE MAXIMUM EXTENT PERMITTED BY LAW. TO AVOID ANY AMBIGUITY OR MISUNDERSTANDING, ALL PROBLEMS ARISING WITH AN E-CODER)R900*i* AFTER THIS POINT ARE BUYER'S RESPONSIBILITY. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE E-CODER) R900*i*. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

ProRead™/E-CODER®/ProCoder™ Encoder

1. PRODUCTS COVERED

This warranty shall apply to the ProRead™ Absolute Encoder, E-CODER® Solid State Absolute Encoder Register, and ProCoder™ Absolute Encoder Register, hereinafter referred to as "Product", sold by Neptune Technology Group Inc. The warranty is extended only to utilities, municipalities, other commercial users, and authorized distributors, hereinafter referred to as "Customer", and does NOT apply to consumers.

2. MATERIALS AND WORKMANSHIP

Neptune Technology Group Inc. ("Neptune") warrants that the product shall be free from defects in manufacture and design for a period of ten (10) years from the date of shipment (such period being the "Warranty Period") when installed, serviced and operated according to Neptune's instructions. Neptune shall not be responsible for any defects in the product (whether due to design, materials, manufacture, or otherwise) which manifest themselves after the expiration of the Warranty Period. Neptune will repair or replace a non-performing product free of charge for ten (10) years.

3. WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS

This warranty does not include field replacement labor or materials costs, which are the responsibility of the Customer. This warranty does not apply if product is placed in non-recommended installations; may have been repaired with parts not recommended by Neptune; is converted, altered or connected by other than Neptune recommended procedures; is used with other than genuine Neptune components or read by equipment not approved or licensed by Neptune; or damaged due to improper care or maintenance, or improper periodic testing (please refer to Encoder Quick Install Guide). This warranty does not apply to any Product that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the Product's ability of performance, including but not limited to; misuse; improper handling; application or installation; excessive operating conditions; tampering or unauthorized repairs and modifications; accidental or intentional damage; or acts of God. In no event shall Neptune be liable for special, incidental, indirect or consequential damages, including, without limitation, lost revenue.

THE ABOVE WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY NEPTUNE WITH RESPECT TO THE PRODUCT. ALL OTHER WARRANTIES, CONDITIONS, TERMS, REPRESENTATIONS, OR OTHER LEGALLY OPERATIVE PROVISIONS CONCERNING THE PRODUCT ARE HEREBY EXPRESSLY EXCLUDED. INCLUDING WITHOUT LIMITATION, ANY WARRANTY, CONDITION, TERM, AND REPRESENTATION OR OTHER LEGALLY OPERATIVE PROVISION AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS PARAGRAPH IS EXPRESSLY INTENDED TO EXCLUDE FROM THIS CONTRACT ALL STATUTORY AND COMMON LAW WARRANTIES TO THE MAXIMUM EXTENT PERMITTED BY LAW. TO AVOID ANY AMBIGUITY OR MISUNDERSTANDING, ALL PROBLEMS ARISING WITH THE PRODUCT AFTER THIS POINT ARE CUSTOMER'S RESPONSIBILITY. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY; (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO; AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

Encoder Compatibility Guarantee

Automatic Reading and Billing (ARB®) System (ARB V, ProRead, E-CODER, and ProCoder)

With the purchase of the ARB encoder metering system, Neptune will provide the assurance that the ARB System purchased today can be expanded from reading with Neptune handheld devices to reading with Neptune mobile products and fixed network systems.

4. GUARANTEE OF COMPATIBILITY

The Pocket ProReader RF, Advantage Probe, R900®, E-CODER®)R900*i*™, ProCoder)R900*i*, DAP handhelds (PC9300, 9800 & CE5320B) and Neptune mobile systems are designed and built by Neptune. This guarantees the utility compatibility between these systems and the ARB encoder registers.

For Probed Reads: When reading ARB encoders with the Pocket ProReader RF, Advantage Probe, or DAP handhelds (PC9300, 9800 and CE5320B), Neptune guarantees that the meter reading obtained will match the mechanical odometer reading.

For RF Reads: When reading ARB encoders connected to an R900 where the R900 reads a ProRead or ARB V encoder hourly, or in the case of E-CODER or ProCoder where the R900 reads the E-CODER or ProCoder every 15 minutes, Neptune guarantees the encoder reading and the remote reading will match upon manual activation of the R900 with a magnet to force an immediate read and transmission. In the event of the E-CODER)R900*i* or ProCoder)R900*i* where the R900 transmission is updated every 15 minutes, Neptune will guarantee the encoder reading and remote reading to match upon this update.

Damage Guarantee

The Pocket ProReader RF, Advantage Probe, R900, E-CODER)R900*i*, ProCoder)R900*i*, DAP handhelds (PC9300 & 9800, CE5320B) and Neptune mobile systems are warranted against causing damage to any ARB encoder register during interrogation. If it is found that the Pocket ProReader RF, Advantage Probe, R900, DAP handhelds (PC9300 & 9800, CE5320B) or Neptune mobile systems caused damage to an ARB encoder register during interrogation, Neptune will either repair or replace the register at no charge to the utility. If there are any questions concerning this Meter & Reading Information Systems Guarantee, please write to: Manager of Consumer Relations, Neptune Technology Group Inc., 1600 Alabama Hwy. 229, Tallassee, Alabama 36078.

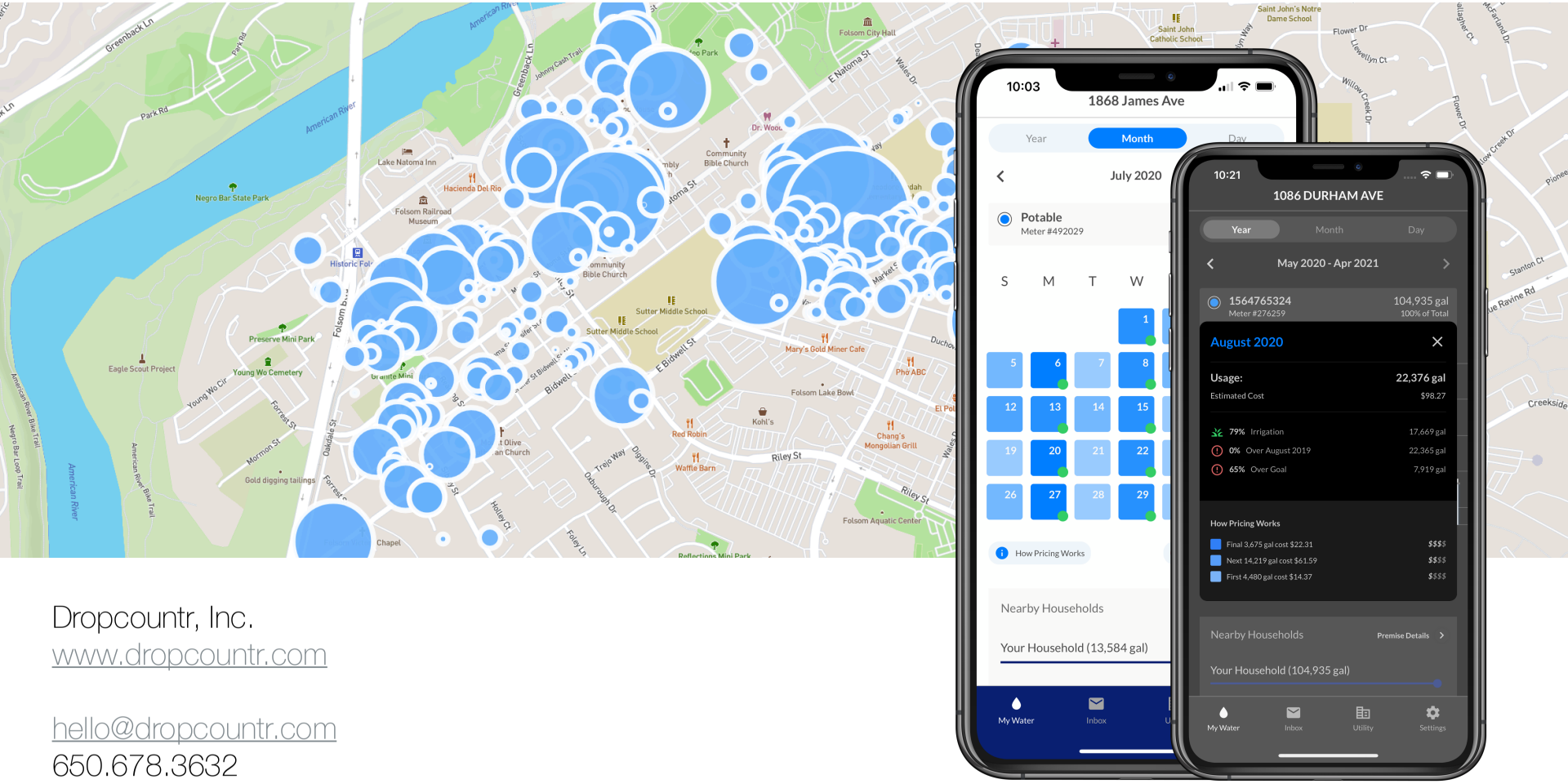
If a Neptune water meter fails an accuracy test during an applicable warranty period, it may be returned to Neptune for repair or replacement at Neptune's option. An accuracy test shall be conducted by the customer according to AWWA standards. If foreign material causes the meter not to perform appropriately, all such materials shall be removed prior to the customer conducting the test. Any meter being returned for repair to Neptune under this performance guarantee must be returned with a copy of the customer's test results. If the meter is returned to Neptune without a copy of the test results or if Neptune's factory test shows the meter to meet current AWWA standards, the customer will be charged a nominal testing fee by Neptune in such cases. Neptune will repair or replace the meter at Neptune's option after the meter has been tested by Neptune. Meters repaired or replaced under the performance guarantee will be guaranteed to perform to AWWA repaired meter accuracy standards. This guarantee is void if components have not been maintained or installed according to Neptune installation and maintenance guidelines, or are otherwise damaged or defective. The accuracy guarantee will not apply where a properly formatted electronic meter reading cannot be obtained on six-digit encoders. The last digit will be displayed only as a zero (0) or five (5) when read remotely. As part of the encoder technology, the electronic reading from the R900 is guaranteed to match the reading on the encoder register upon manual activation of the R900 with a magnet to force an immediate read and transmission (one per hour). System damage as a result of vandalism or acts of God are not covered. Additional warranties may also apply to individual system components. Neptune's liability with respect to breaches of the foregoing warranty shall be limited as stated herein. Neptune's liability shall in no event exceed the purchase price. Neptune shall not be subject to and disclaims the following: (1) any other obligations or liabilities arising out of breach of contract or of warranty; (2) any obligations whatsoever arising from tort claims (including negligence and strict liability) or arising under other theories of law with respect to products sold or services rendered by Neptune, or any undertakings, acts, or omissions relating thereto; and (3) all consequential, incidental, special, multiple, exemplary, and punitive damages whatsoever.

THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES, WHETHER EXPRESSED, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

CUSTOMER PORTAL DROPCOUNTR

dropcountr

Customer Portal & Utility Dashboard



Dropcountr, Inc.
www.dropcountr.com

hello@dropcountr.com
650.678.3632

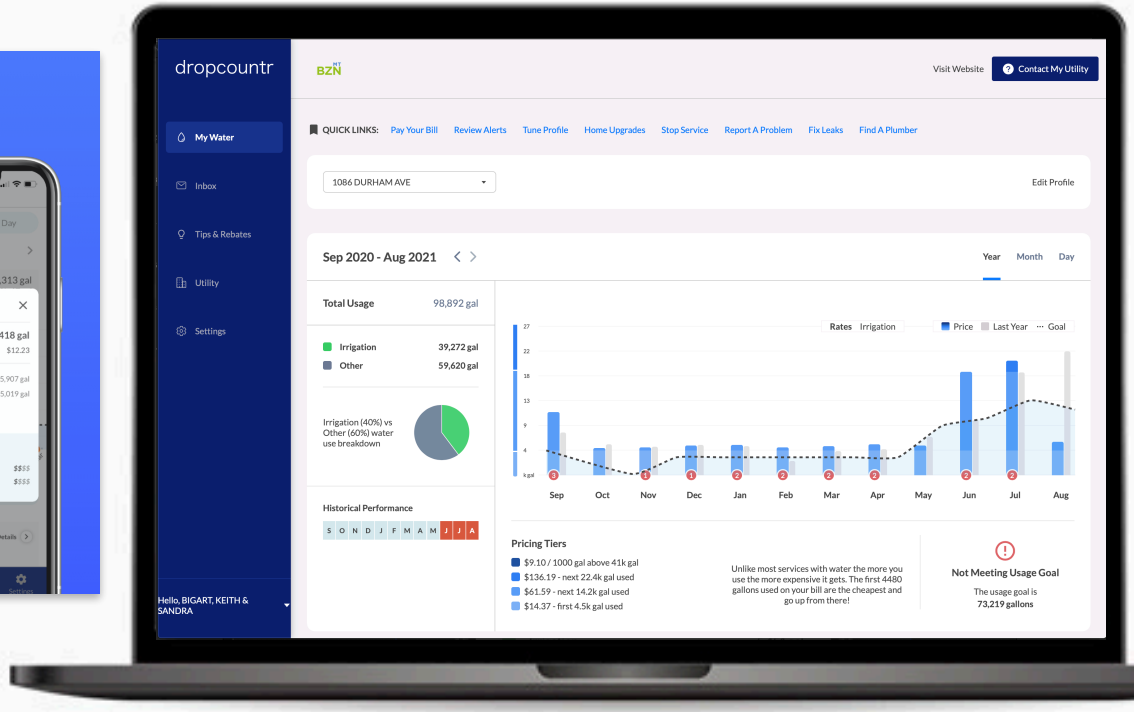
HOME & BUSINESS

FOR RESIDENTIAL AND COMMERCIAL CUSTOMERS

Dropcountr HOME is designed to increase residential customer Water IQ. Customer account information, water use, important alerts, and electronic bill payment are all conveniently accessed on a smartphone or computer. Dropcountr HOME is intuitive, powerful, and provides timely information to empower the utility customer.

Dropcountr BUSINESS offers the same features as HOME, but with an interface and experience better suited for commercial customers.

Both HOME and BUSINESS are available as mobile iOS & Android apps, and on any internet-connected computer or smartphone,



Increase Customer Water IQ

HOME & BUSINESS

Dropcountr HOME & BUSINESS are designed to first inform and educate your customers, and then empower them to manage their water use and increase self-service.

Reduce customer service call volume

Customers who have access to their information, and understand their water use are less likely to call utility staff with questions or to dispute a bill.

Stronger customer relationships for uncertain times

Rates will increase and pipes will break. Strengthen the utility-customer relationship ahead of these events, by providing customers with a free and convenient monitoring tool.

Leak alerts

Dropcountr leak detection algorithms trigger alerts to customer mobile devices and email, and are flagged for utility staff in CLEAR.

Monthly Water Use Reports

Automated monthly water use emails supplement HOME & BUSINESS on mobile and web. This monthly summary reminds users to check their account, and presents an opportunity to deliver timely and relevant utility announcements or messages.

Information Inclusivity

All customers are entitled to information that increases their Water IQ. Dropcountr is available in Spanish, and is the only water customer portal that is ADA compliant - on both mobile and web.

- Why is my bill so high?
- How much water do I use?
- How does that compare to last month?
- Do I use more than I should?
- How can I prevent leaks and water damage?
- ¿Tiene información en Español?

Rates and Tiers

Rate tiers can be confusing and lead to customer service calls. Dropcountr presents rate tiers and pricing in a simple and intuitive format.

★★★★★

RickEsq, 05/04/2021

Great app

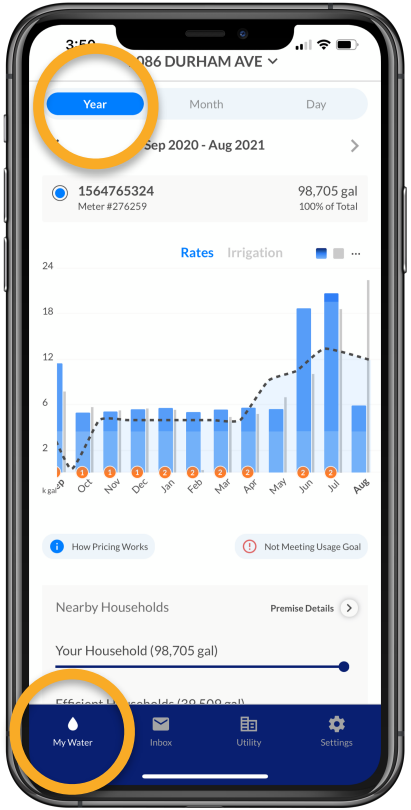
This app was a lifesaver. We have a vacation property and not always there. A couple of busted sprinklers made this app indispensable. Probably saved us hundre more

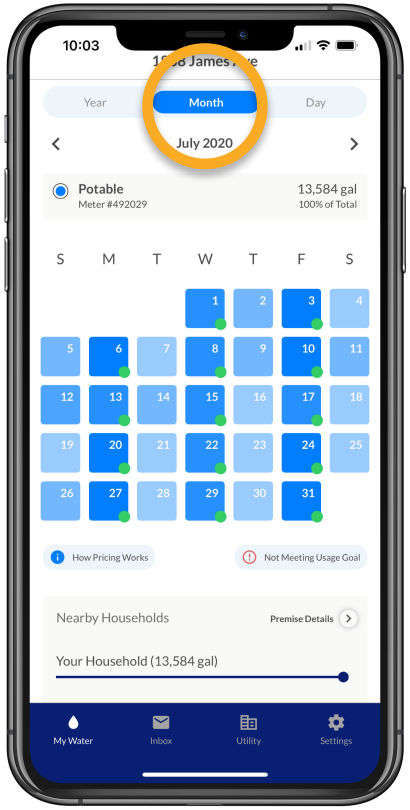
My Water Use

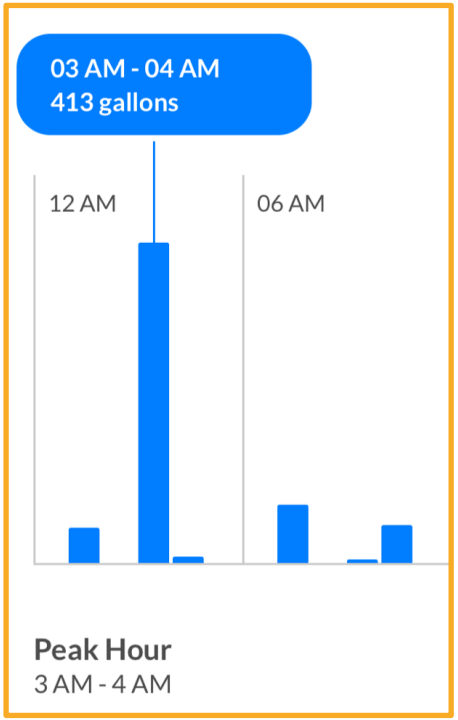
CUSTOMER ENGAGEMENT & SELF-SERVICE

Dropcountr HOME and BUSINESS users can view and better understand their water use by the YEAR, MONTH, DAY, and HOUR.

Select between multiple meters or review a second service address. Understand how water use relates to a bill with rate tier and pricing details.







Flexible Notifications

CUSTOMER ENGAGEMENT & SELF-SERVICE

Automated Notifications

Leak alerts and budget overages are sent automatically.

A free monthly water use report is also sent via email.

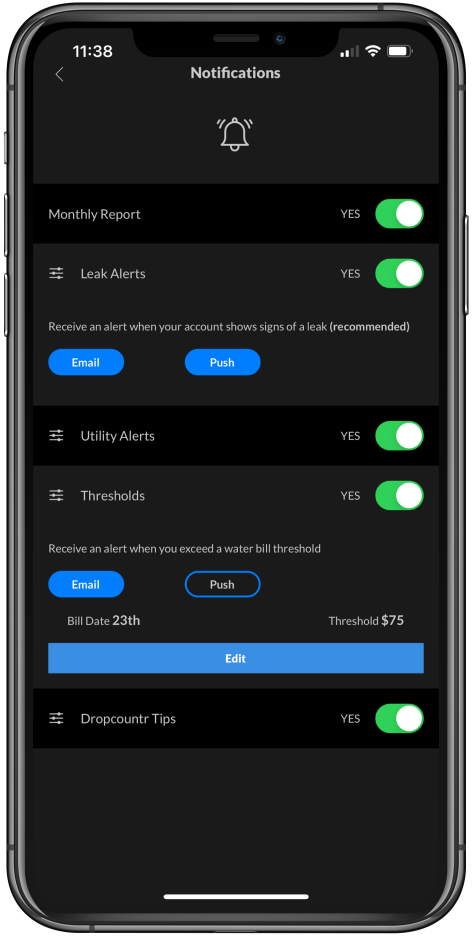
Timely Announcements

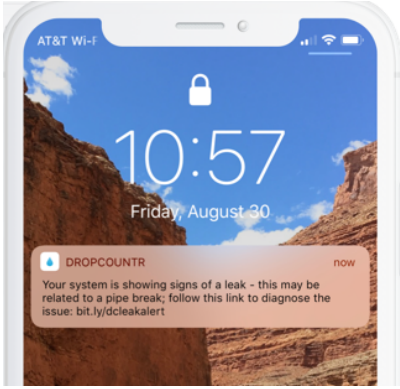
Utility staff can also send messages and notifications regarding rate changes, rebate opportunities, boil water advisories, service alerts, and more.

User-defined Message Preferences

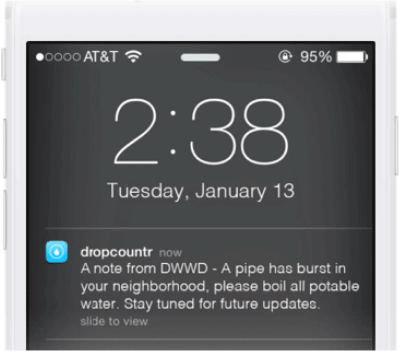
Customers select how to receive messages in each category.

Choose one, or a combination of mobile push message app, email, text message.





LEAK ALERT VIA PUSH MESSAGE



SERVICE OUTAGE NOTIFICATION

Irrigation Detection & Demand

OPTIONAL MODULE

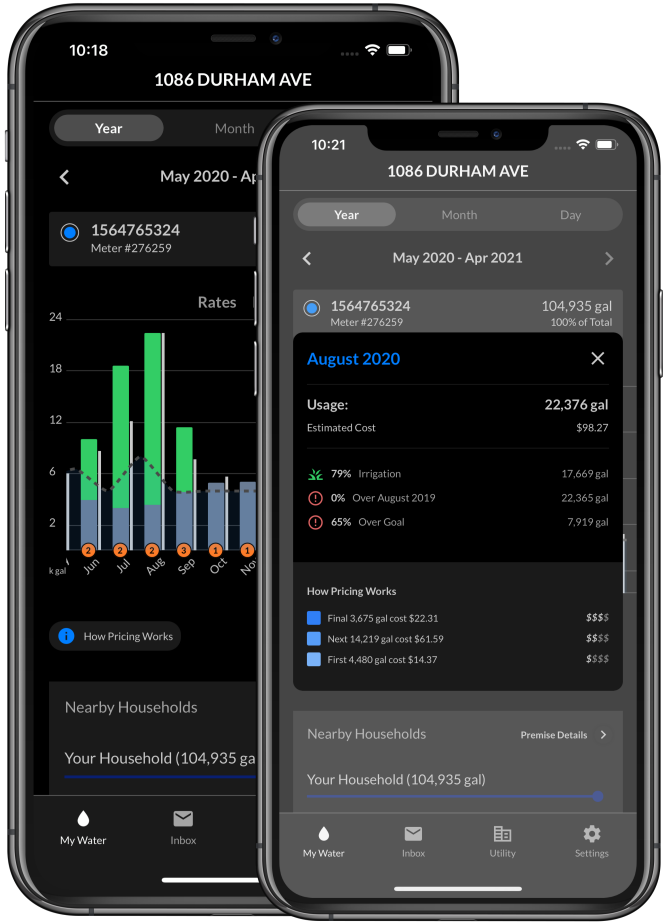
Our proprietary machine learning algorithm disaggregates irrigation water use for comparison to calculated irrigation demand for each customer account.

Features

- Machine learning identifies irrigation events and volume
- Demand function leverages local precipitation and climate data
- Rich irrigation dataset and analytics for utility staff

Benefits

- Eliminate customer blindspots on irrigation schedule and volume
- Improve customer relations and increased satisfaction
- Elevated customer Water IQ reduces service calls
- Focused and effective irrigation messaging to target customers



Turnkey Deployments

CUSTOMER ENGAGEMENT & SELF-SERVICE

Dedicated launch and support team

Your dedicated Customer Success Manager will guide you through the launch process, and remain available to support you during your program. We support initial customer outreach at launch, and will continue to drive user adoption over the life of the program.

Electronic data transfer made easy

Our engineering toolbox includes API integrations with many meter, billing, and customer information system providers.

Itron ZENNER All that counts. MUELLER Mueller Water Products NEPTUNE TECHNOLOGY GROUP kamstrup

Dropcountr engineering staff also have off the shelf importers to transfer data via secure FTP as needed.

Training is anytime, always free, and personalized

Your Customer Success Manager trains your team on CLEAR using your own customer data.

FAQs and video tutorials are always available to you, and if you hire new staff or need a refresher - just let us know.

Public launch within 90 days of project start

Our contract-to-launch record is 2 weeks, but we plan for 90 days or less. With good communication and our well-tested launch plan, we'll minimize the disruption to your staff and only require a few hours of their time and attention.

Contact

Robb Barnitt

robb@dropcountr.com
650.678.3632
https://www.linkedin.com/in/rbarnitt/

Dropcountr, Inc.

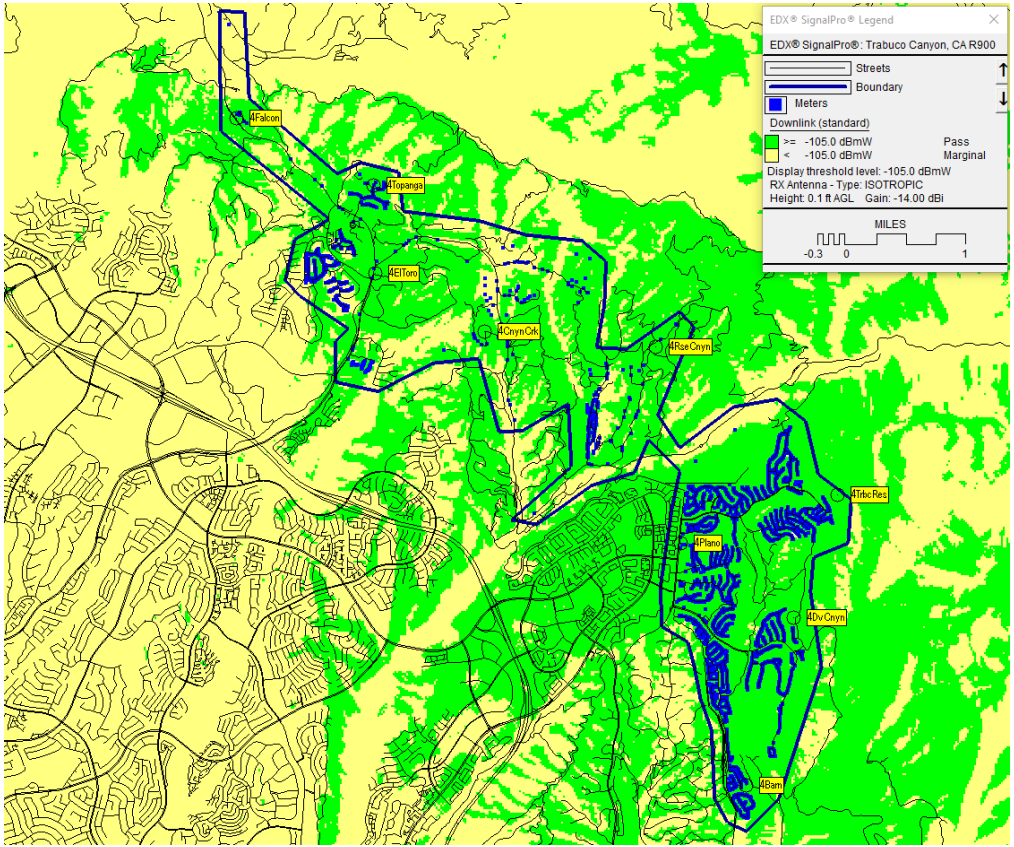
https://www.dropcountr.com
https://www.linkedin.com/company/dropcountr

PROPAGATION STUDY

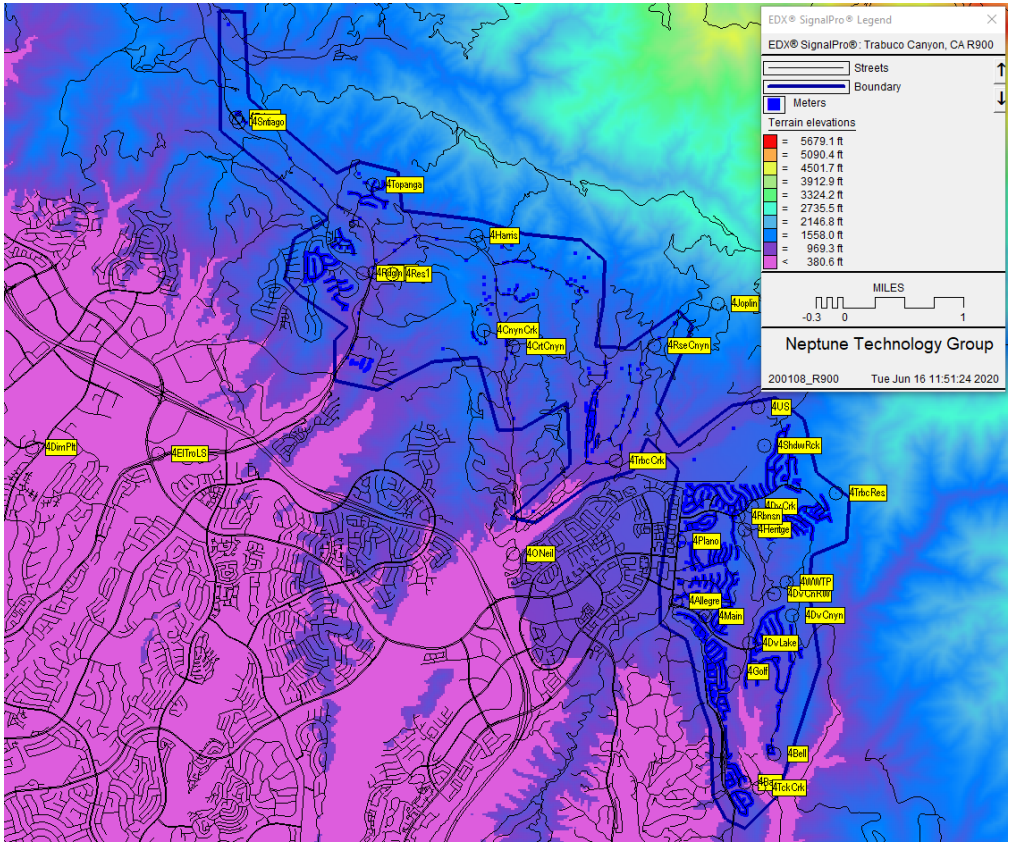
Predicted Coverage Results:

Map	Description	Provided Services		4,189	Geocoded Services	4,119	Area (sq Miles)	8.39	sq Mi /Coll
		#Coll	MIU Type	Read Type	Pass	%Pass	Pass	%Pass	
1	Best Provided	9	R900v4 Pit	Billing	3,728	90.50%	6.62	78.91%	0.7

Map 1: Best Provided Assets



Elevation Map *(National Elevation Dataset available, courtesy of the U.S. Geological Survey)*



Gateway Locations:

Map	Location	Latitude	Longitude	Collector	Elev(m)	AntHgt(m)	Elev(ft)	AntHgt(ft)	Coax Type	Coax(ft)	Antenna
1	4Barn	33.621427	-117.567606	GPV4	310	12	1016	40	LDF4	40	MFB9155
1	4CnynCrk	33.675469	-117.605014	GPV4	425	8	1394	25	LDF4	25	MFB9155
1	4DvCnyn	33.641381	-117.560853	GPV4	425	17	1395	55	LDF4	55	MFB9155
1	4ElToro	33.682433	-117.620564	GPV4	330	17	1083	55	LDF4	55	MFB9155
1	4Falcon	33.700981	-117.6404	GPV4	415	9	1362	30	LDF4	30	MFB9155
1	4Plano	33.650214	-117.577025	GPV4	355	12	1165	40	LDF4	40	MFB9155
1	4RseCnyn	33.673672	-117.580551	GPV4	408	12	1338	40	LDF4	40	MFB9155
1	4Topanga	33.692958	-117.620908	GPV4	418	7	1372	22	LDF4	22	MFB9155
1	4TrbcRes	33.656021	-117.554617	GPV4	513	13	1684	42	LDF4	42	MFB9155

Conditions:

- Spare gateway recommended for system maintenance.
- Revised propagation analysis required for Gateway location or height changes.
- FAA/ASR may be required for structures near airports or heights >200ft.
- AM Tower detuning evaluations for structures within 3km, check with LBA Group or Sitesafe.
- 10ft minimum vertical separation from other 900MHz system antennas on structure. Antenna requires 3ft-4ft standoff for side mounting on towers.
- Complies with FCC/IC Rules: May not cause harmful interference, and must accept any interference received, including interference that may cause undesired operation.
- MIUs mounted inside structures are not recommended for Fixed Network solutions. RF signal is affected differently by building materials used within structures and it is difficult to account for all types of construction. If the Scope states inside MIU used for study, an average loss value is applied to the model. In situations, where inside MIUs do not perform as necessary, an external wall MIU or additional Gateways may be required
- Propagation based on defined MIU (External Wall or Pit w/External Antenna) with specified gateway/collector. Older equipment should be replaced. Propagation is subject to change based on equipment specifications and performance. Performance cannot be confirmed until final system evaluation and analysis complete. Daily - 1 read in 24 hours (1 Day) expected; Billing - 1 read in 72 hours (3 Days) expected; Hourly - 1 read each hour expected. Propagation model is based on performance for >90% read success; backfill read redundancy included, and typical RF environment <-120dBm. Use of this propagation analysis done with this understanding and there is no guarantee of product or performance. Additional gateways could be required. Antenna heights are set to 75 feet as default unless heights provided. This affects Find (search ring) and asset locations.
- R900 IoT gateway (Tmega) with 2 antenna receiver diversity requires minimum of 6 feet horizontal and ideally 12-20 feet horizontal antenna separation.

CERTIFICATE OF INSURANCE

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 04/29/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Willis Towers Watson Certificate Center	
Willis Towers Watson Northeast, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA	PHONE (A/C, No, Ext): 1-877-945-7378	FAX (A/C, No): 1-888-467-2378
	E-MAIL ADDRESS: certificates@willis.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : ACE American Insurance Company	22667
INSURED Ferguson Enterprises, LLC and Subsidiaries (See Attached Named Insured Schedule) 12500 Jefferson Avenue Newport News, VA 23602	INSURER B : Indemnity Insurance Company of North Ameri	43575
	INSURER C : ACE Fire Underwriters Insurance Company	20702
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** W20766400 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [X] LOC [ ] OTHER:			HDO G72497466	05/01/2021	05/01/2022	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 5,000,000 $ 5,000,000 $ 5,000 $ 5,000,000 $ 10,000,000 $ 10,000,000
A	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [X] HIRED AUTOS ONLY [X] NON-OWNED AUTOS ONLY [X] Self-Insured [X] Physical Damage			ISA H25550018	05/01/2021	05/01/2022	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 5,000,000 $ $ $
	[ ] UMBRELLA LIAB [ ] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: No (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		WLR C67806943	05/01/2021	05/01/2022	[X] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 2,000,000 $ 2,000,000 $ 2,000,000
A	Workers' Compensation & Employers Liability - AZ/CA/MA Per Statute			WLR C67806980	05/01/2021	05/01/2022	E.L. Each Accident E.L. Disease -Pol Lmt E.L. Disease-Each Emp	$2,000,000 $2,000,000 $2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Workers Compensation Policy WLR C67806943 provides coverage for AK, AL, AR, CO, CT, DC, DE, FL, GA, HI, IA, ID, IL, IN, KS, KY, LA, MD, ME, MI, MN, MO, MS, MT, NC, NE, NH, NJ, NM, NV, NY, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WV.

SEE ATTACHED

CERTIFICATE HOLDER

Evidence of Coverage

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

AGENCY CUSTOMER ID: _____

LOC #: _____

ADDITIONAL REMARKS SCHEDULE

AGENCY		NAMED INSURED
Willis Towers Watson Northeast, Inc.		Ferguson Enterprises, LLC and Subsidiaries (See Attached Named Insured Schedule) 12500 Jefferson Avenue Newport News, VA 23602
POLICY NUMBER See Page 1		
CARRIER See Page 1	NAIC CODE See Page 1	EFFECTIVE DATE: See Page 1

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

INSURER AFFORDING COVERAGE: ACE Fire Underwriters Insurance Company NAIC#: 20702

POLICY NUMBER: RWC C67807029 EFF DATE: 05/01/2021 EXP DATE: 05/01/2022

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Workers' Compensation &	E.L. Each Accident	$2,000,000
Employers Liability - WI	E.L. Disease -Pol Lmt	$2,000,000
Per Statute	E.L. Disease-Each Emp	$2,000,000

SR ID: 21031942 BATCH: 2075006 CERT: W20766400

As of 1/29/2021

FERGUSON ENTERPRISES, LLC

ACTIVE DBA SUBSIDIARY LIST

Entity Name	Entity Name
AC Wholesalers	Ferguson HVAC – EastWest Air
ACF Environmental (effective 11/16/2020)	Ferguson HVAC – Lyon Conklin
Action Automation, a Wolseley Industrial Group company (eff 8/20/2018)	Ferguson Integrated Services
Action Plumbing Supply (effective 7/15/2019)	Ferguson International
ADL (effective 7/16/2018)	Ferguson Panama, S.A.
Alaska Pipe & Supply	Ferguson Parts & Packaging
Amerock, LLC (effective 1/11/2021)	Ferguson Valve & Automation
Amerock Holdings, Inc. (effective 1/11/2021)	Ferguson Waterworks
Andrews Lighting & Hardware Gallery	Ferguson Waterworks - Municipal Pipe
The Ar-Jay Center	Ferguson Waterworks - Red Hed
Atlantic American Fire Equipment Company	Ferguson Waterworks EPPCO
Avallon Global	Ferguson Waterworks International
BAC Appliance Center	Galleria Bath & Kitchen Showplace
Bath + Beyond	Grand Junction Pipe (effective 9/24/2018)
Bayport Partners, LLC	HM Wallace, Inc.
Blackman Plumbing Supply, LLC (effective 12/11/2018)	H. P. Products Corporation
Brock-McVey (effective 7/30/2018)	HP Logistic, Inc.
Bruce-Rogers Company	Improvement Brands Holdings, Inc.
Build.com, Inc. (fka Improvement Direct, Inc.)	Industrial Hub of the Carolinas
Cal-Steam	Innovative Soil Solutions LLC (effective 7/29/2019)
Capital Distributing (effective 10/29/2018)	James Martin Signature Vanities, LLC (effective 1/28/2019)
City Lights Design Showroom	J&G Products
CFP	Jones Stephens Corp. (effective 8/13/2018)
Clawfoot Supply, LLC	Jones Stephens Global Sourcing (Wuxi) Ltd. (effective 8/13/2018)
Cline Contract Sales	J.D. Daddario Company
Columbia Pipe & Supply LLC (eff 3/13/2020)	Joseph G. Pollard Co.
Custom Lighting & Hardware	JWIT Hydrotherapy Bath Solutions (effective 3/16/2020)
Davies Water	Karl's Appliances
DBS Holdings, Inc.	Kitchen Art (effective 2/4/2019)
Dealernet	Lakeland Plumbing Supply, LLC
Duhig Stainless (effective 3/12/2018)	Lighting Design Center
Energy & Process Corporation	Lighting Unlimited
Equarius Waterworks, Meter & Automation Group	Lincoln Products
Factory Direct Appliance	Linwood Pipe and Supply
Ferguson Bath & Kitchen Gallery	Living Direct, Inc.
Ferguson Bath, Kitchen & Lighting Gallery	Louisiana Utilities Supply Company
Ferguson.com	LUSCO
Ferguson CESCO, Inc.	Mahwah Realty, LLC
Ferguson Direct	Maskir Properties Inc.
Ferguson CeSCO, Inc.	Matera Paper Company, Inc.
Ferguson Enterprises, Inc.	Max Industries, Ltd. (effective 1/28/2019)
Ferguson Enterprises, LLC	McFarland Supply
Ferguson Enterprises of Virginia, LLC	MFP Design (effective 3/25/2020)
Ferguson Facilities Supply (FEI)	Michigan Meter
Ferguson Facilities Supply (for Matera Paper -TX only)	Millennium Lighting, Inc. (effective 8/27/2018)
Ferguson Facilities Supply, Dogwood Building Supply Division (eff 10/22/18)	Mission Valley Pipe (effective 6/3/2019)
Ferguson Fire & Fabrication, Inc.	Mississippi Utility Supply Co. (MUSCO)
Ferguson Fire & Fabrication International	Myers HVAC Supply
Ferguson Heating & Cooling	National Fire Products
Ferguson Hospitality Sales	New Jersey Plumbing Group, LLC
Ferguson HVAC – Air Cold	New York Plumbing Designs, LLC

FERGUSON ENTERPRISES, LLC

ACTIVE DBA SUBSIDIARY LIST

PAGE 2 - DBA & SUBSIDIARY LIST	**Entity Name**
Entity Name	Wolseley de Puerto Rico, Inc.
North Point Plumbing Supply, LLC	Wolseley Financial Services
Orange County Plumbing Group, LLC	Wolseley Industrial Group
Palm Designs LLC	Wolseley Integrated de Mexico S.A. de C.V.
PCS Industries	Wolseley Investments North America, Inc.
PL Sourcing	Wolseley Investments, Inc.
Plumb Source	Wolseley NA Construction Services, LLC
Plumbing Décor	Wolseley NA Finance, Inc.
Plumbing Holdings Corp.	Wolseley Staffing de Mexico S.A. de C.V.
Pollardwater	WPCC Forwarding
Powell Pipe & Supply Co.	Wright Plumbing Supply
Power Equipment Direct Inc.	
Process Instruments & Controls, LLC (effective 9/9/2019)	
Professional's Bath Source	
PV Sullivan Supply	
Ramapo Wholesalers	
RB Huntington Realty, LLC	
Rencor Controls (effective 3/16/2020	
Robertson Supply (effective 11/19/2018)	
Rocky Hollow Realty, LLC	
Renwes Sales	
Redlon & Johnson	
Reese Kitchen, Bath & Lighting Gallery	
S.W. Anderson Sales Corporation (effective 11/11/2019)	
Safe Step Walk in Tub, LLC (effective 7/31/2018)	
SG Supply Co.	
Ship-Pac	
Signature Hardware	
SimplyPlumbing, LLC	
SOS Sales	
Southhampton Realty Corp.	
Stock Loan Services, LLC	
Supply.com	
Tarpon Wholesale Supplies	
The Davidson Group	
The Plumbing Source	
The Stock Market	
Tinkar Realty, LLC	
TotalFab, LLC	
TPW Kitchen & Bath	
Wallwork (effective 12/10/2018)	
Wanlyn Realty Corp.	
Waterworks Industries	
Webb Distributors	
Western Air Supply	
Westfield Lighting	
Wholesale Group	
Wholesale Group Operations, Inc.	
Wolseley (Barbados) Ltd	

EXCEPTIONS & CLARIFICATIONS

EXCEPTIONS & CLARIFICATIONS

Ferguson's Legal & Risk Departments have carefully reviewed the terms in the RFP and have presented our exceptions and clarifications below. Ferguson is willing to negotiate these terms upon award to ensure a mutually beneficial agreement.

Legal Exceptions

Attachment A – Agreement

- Article 10.1. Delete "arising out of or directly or indirectly related to the negligent performance or attempted performance of the provisions hereof, including any willful or" and replace with "to the extent caused in whole or in part by the" And delete "sole."
- Take exception to the extent a product warranty is implied from the Contractor. All materials are covered by manufacturer warranties and Contractor will provide warranty service under the manufacturer's warranty. Contractor only warrants installation to the extent included in its scope.

Insurance Exceptions

- Page 24
  - First paragraph – strike "arise from or in connection with" with "be caused in whole or in part by"
  - A 1. – strike "or the full per occurrence limits of the policies available, whichever is greater"
  - A 4. – strike entirely including the "OR Cyber Liability…" paragraph
- Page 25
  - B 1. a. strike "10 01" and replace with "12 19"; strike "arising out of" and replace with "caused in whole or in part by"
- Page 26
  - 5. – strike the last sentence beginning with "TCWD reserve the right to require complete, certified copies of all required…"

ENLARGED PRICE SHEET

Trabuco Canyon Water District
AMI Cost Proposal
AMI Network and Equipment - District Owns & Maintains Network

Item/Service	Quantity	Unit Price	Extended Price	Lead Time (in weeks)	Notes/Comments
Upfront AMI Hardware					
AMI Network Infrastructure					
Powered Data Collector	7	$ 9,500.00	$ 66,500.00	4 Weeks	*7 Powered Neptune R900 Gateways **Subject to change upon field visit*
Solar Data Collector	2	$ 10,500.00	$ 21,000.00	N/A	*2 Solar Neptune R900 Gateways **Subject to change upon field visit*
Network Installation Services	9	$ 9,250.00	$ 83,250.00	N/A	*7 Powered & 2 Solar **Standard Gateway Installations*
Subtotal			**$ 170,750.00**		
AMI Network and Deployment Tools					
Handheld programming device	0	$ -	$ -		*Neptune's R900 system does not require programming*
Subtotal			**$ -**		
Meter Endpoints					
Water Meter Endpoint - Single	0		$ -		*Water meters proposed include integrated endpoints*
Subtotal			**$ -**		
Upfront Professional Services					
Project Management	1	$ 6,000.00	$ 6,000.00	N/A	
Network Design/System Planning	1	$ 1,000.00	$ 1,000.00	N/A	
System Acceptance Testing	1	$ 1,500.00	$ 1,500.00	N/A	
Training and Documentation (Network Hardware)	1	$ 3,500.00	$ 3,500.00	N/A	
Performance Bond	0	$ -	$ -	N/A	*No Payment and/or Performance Bonds included in proposal*
			$ -		
Subtotal			**$ 12,000.00**		
Other Upfront AMI Network Costs					
Shipping	0	$ -	$ -		*No charge on orders over $20,000.00*
Subtotal			**$ -**		
Subtotal			**$ 182,750.00**		
7.75% Sales Tax NOT INCLUDED					
Total AMI Network Upfront Costs			**$ 182,750.00**		

Water Meter Hardware

Water Meters with Registers						
5/8"	2043	$229.00	$	467,847.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
3/4" SL 7.5" Lay-Length	706	$250.00	$	176,500.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
1"	188	$300.00	$	56,400.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
1.5"	39	$525.00	$	20,475.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
2"	124	$650.00	$	80,600.00	4 Weeks	*Neptune T-10 E-Coder R900i Meters*
3"	19	$1,550.00	$	29,450.00	4 Weeks	*Neptune HP Turbine Meters*
4"	4	$1,750.00	$	7,000.00	4 Weeks	*Neptune HP Turbine Meters*
6"	5	$3,150.00	$	15,750.00	4 Weeks	*Neptune HP Turbine Meters*
10"	2	$7,100.00	$	14,200.00	4 Weeks	*Neptune HP Turbine Meters*
Subtotal	**3130**					
Retrofits						
5/8"	561	$22.00	$	12,342.00	4 Weeks	*6' Neptune R900 External Antenna*
3/4"	168	$22.00	$	3,696.00	4 Weeks	*6' Neptune R900 External Antenna*
1"	305	$22.00	$	6,710.00	4 Weeks	*6' Neptune R900 External Antenna*
1.5"	13	$22.00	$	286.00	4 Weeks	*6' Neptune R900 External Antenna*
2"	51	$22.00	$	1,122.00	4 Weeks	*6' Neptune R900 External Antenna*
3"	4	$22.00	$	88.00	4 Weeks	*6' Neptune R900 External Antenna*
4"	2	$22.00	$	44.00	4 Weeks	*6' Neptune R900 External Antenna*
6"	2	$22.00	$	44.00	4 Weeks	*6' Neptune R900 External Antenna*
Subtotal	**1106**		**$**	**892,554.00**		
7.75% Sales Tax NOT INCLUDED						
Total Metering Upfront Costs			**$**	**892,554.00**		

Ongoing AMI Network Services

RF Licensing	0	$ -	$ -	N/A	*Neptune's R900 system utilizes unlicensed technology*
AMI Network Backhaul	0	$ -	$ -	N/A	*District to contract directly with Verizon or AT&T*
Maintenance	0	$ -	$ -	N/A	*Optional entitlement in "Optional Equipment & Services" tab*
Service Fees	0		$ -		
			$ -		
Subtotal			**$** -		

ASSUMPTIONS:

Sales Tax NOT INCLUDED & only applicable to hardware, not services

***Meter box lids NOT included in proposal (Optional Equipment)

Assumes 7 Powered Gateways. Subject to change pending field survey.

Assumes 7 Powered Gateway installations. Subject to change pending field survey.

Assumes 2 Powered Gateways. Subject to change pending field survey.

Assumes 2 Powered Gateway installations. Subject to change pending field survey.

Assumes all 3", 4", 6", 10" meters are Turbine meters

Standard Gateway install included up to 50' of above ground conduit for new 120v AC circuit to power ups/gateway

Standard Gateway install does not include trenching, asphalt cutting, demo, or concrete work

TOTALS IN BLUE

Trabuco Canyon Water District
AMI Cost Proposal
AMI Headend Hosted

Item/Service	Quantity	Unit Price	Extended Price	Equipment Lead Time (in weeks)	Notes/Comments
Upfront AMI Software					
One-Time Database Set-Up Fee	1	$ 2,500.00	$ 2,500.00		*Setup of Neptune 360 Amazon Cloud Server*
Annual AMI Headend Software Hosting Fee	1	$10,750.00	$10,750.00	N/A	*Neptune 360 Hosting Year 1*
Subtotal			**$ 13,250.00**		
Upfront Professional Services					
Project Management	0	$ -	$ -	N/A	
AMI/CIS System Integration	0	$ -	$ -	12 Weeks	*District to contract directly w/CIS Vendor*
AMI/Customer Portal Integration	0	$ -	$ -	12 Weeks	*District to contract directly w/CIS Vendor*
Subtotal			**$ -**		
Other Upfront AMI Headend Costs					
	0	$ -	$ -		
Subtotal			**$ -**		
Total AMI Headend Hosted Upfront Costs			**$ 13,250.00**		
Ongoing AMI Headend Services					
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 2*
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 3*
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 4*
Annual AMI Headend Software Hosting Fee	0	$10,750.00	$0.00	N/A	*Neptune 360 Hosting Year 5*
Subtotal			**$0.00**		

ASSUMPTIONS:

No sales tax on services

TOTALS IN BLUE

Trabuco Canyon Water District
AMI Cost Proposal
Customer Web Portal

Item/Service	Quantity	Unit Price	Extended Price	Equipment Lead Time (in weeks)	Notes/Comments
Upfront AMI Software					
One-Time Database Set-Up Fee	1	$ 11,250.00	$ 11,250.00		*Setup of DropCountr Hosted Cloud Server*
Annual Customer Web Portal Software Hosting Fee	1	$8,500.00	$8,500.00	N/A	*DropCountr Hosting Year 1*
Subtotal			**$ 19,750.00**		
Upfront Professional Services					
Project Management	0	$ -	$ -	N/A	
Subtotal			**$ -**		
Other Upfront AMI Headend Costs					
	0	$ -	$ -	N/A	
Subtotal			**$ -**		
Total AMI Headend Hosted Upfront Costs			**$ 19,750.00**		
Ongoing AMI Headend Services					
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 2*
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 3*
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 4*
Annual Customer Web Portal Software Hosting Fee	0	$8,500.00	$0.00	N/A	*DropCountr Hosting Year 5*
Subtotal			**$0.00**		

ASSUMPTIONS:

No sales tax on services

TOTALS IN BLUE

Trabuco Canyon Water District
AMI Cost Proposal
Meter Installation

Item/Service	Quantity	Unit Price	Extended Price	Notes/Comments
Meters & Meter Equipment Installation				
Installation of Water Meter and Ancillary Equipment				
5/8"	2043	$ 88.20	$ 180,192.60	*Standard Meter Installation*
3/4" SL 7.5" Lay-Length	706	$ 88.20	$ 62,269.20	*Standard Meter Installation*
1"	188	$ 88.20	$ 16,581.60	*Standard Meter Installation*
1.5"	39	$ 440.00	$ 17,160.00	*Standard Meter Installation*
2"	124	$ 440.00	$ 54,560.00	*Standard Meter Installation*
3"	19	$ 625.00	$ 11,875.00	*Standard Meter Installation*
4"	4	$ 625.00	$ 2,500.00	*Standard Meter Installation*
6"	5	$ 2,498.00	$ 12,490.00	*Standard Meter Installation*
10"	2	$ 3,748.00	$ 7,496.00	*Standard Meter Installation*
Subtotal	3,130		**$ 365,124.40**	
Water Meter Retrofit Antenna				
5/8"	561	$ 30.48	$ 17,099.28	*Antenna Install, no lid replacement*
3/4"	168	$ 30.48	$ 5,120.64	*Antenna Install, no lid replacement*
1"	305	$ 30.48	$ 9,296.40	*Antenna Install, no lid replacement*
1.5"	13	$ 30.48	$ 396.24	*Antenna Install, no lid replacement*
2"	51	$ 30.48	$ 1,554.48	*Antenna Install, no lid replacement*
3"	4	$ 30.48	$ 121.92	*Antenna Install, no lid replacement*
4"	2	$ 30.48	$ 60.96	*Antenna Install, no lid replacement*
6"	2	$ 30.48	$ 60.96	*Antenna Install, no lid replacement*
Subtotal	1,106		**$ 33,710.88**	
Water Meter Lid Installation				
Pre-drilled Meter Box Lid Installation	-	$ 12.97	$ -	*Optional Lid Replacement*
Subtotal			$ -	

Professional Services					
Project Management	1	$ 5,000.00	$	5,000.00	
Mobilization	1	$ 11,500.00	$	11,500.00	
Work Order Management System Costs		$ -	$	-	*Included in per unit price*
Estimated Not to Exceed Travel and Living Expenses		$ -	$	-	*Included in per unit price*
Printing Fees (Door Hangers)	-		$	-	*District is to provide*
Call Center Support Fees	-		$	-	*District is to provide*
Return to Utility (RTU) Charges	-	$ 88.20	$	-	*For 2nd revisit per location*
Subtotal			**$**	**16,500.00**	
Other Installation Services					
			$	-	
Staging Site/Warehouse Space	-		$	-	*District to provide*
Time & Materials Hourly Rate	-	$ 150.00	$	-	*Include estimates for relocation meters to the curb and other such activities.*
Subtotal			$	-	

TOTAL WATER METER INSTALLS + EQUIPMENT **$ 415,335.28**

Assumptions:

No sales tax on services

TOTALS IN BLUE

Trabuco Canyon Water District
Cost Proposal
Optional Equipment & Services

	Quantity	Unit Price	Extended Price	Lead Time (in weeks)	Notes/Comments
Water Options					
Other Meter & Endpoint Options					
1.5" Neptune Mach10i Ultrasonic Meter	-	$750.00	$ -	4 Weeks	*10" or 13" Lay-Length*
2" Neptune Mach10i Ultrasonic Meter	-	$900.00	$ -	4 Weeks	*10" or 15.25" or 17" Lay-Length*
3" Neptune Mach10i Ultrasonic Meter	-	$1,950.00	$ -	4 Weeks	*17" Lay-Length*
4" Neptune Mach10i Ultrasonic Meter	-	$2,500.00	$ -	4 Weeks	*20" Lay-Length*
6" Neptune Mach10i Ultrasonic Meter	-	$4,000.00	$ -	4 Weeks	*24" Lay-Length*
10" Neptune Mach10i Ultrasonic Meter	-	$9,500.00	$ -	4 Weeks	*26" Lay-Length*
5/8" Meter w/Cellular Radio w/1-Year Data Plan	-	$282.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
3/4" SL Meter w/Cellular Radio w/1-Year Data Plan	-	$305.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
1" Meter w/Cellular Radio w/1-Year Data Plan	-	$350.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
1.5" Meter w/Cellular Radio w/1-Year Data Plan	-	$550.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
2" Meter w/Cellular Radio w/1-Year Data Plan	-	$675.00	$ -	4 Weeks	*Neptune T-10 E-Coder Meter Potted to R900C*
Cellular Radio Only	-	$133.00	$ -	4 Weeks	*Neptune R900C - Cellular Endpoint Only*
1-Year Cellular Data Plan	-	$11.45	$ -	N/A	Annual Data Plan for Neptune Cellular Radio
20' External Antenna	-	$32.00	$ -	4 Weeks	*For Meters in Deep Vaults*
Reading Alternatives					
Walk-By/AMR Reading/Datalogging Equipment	-	$ 2,500.00	$ -	4 Weeks	Neptune Belt Clip Transceiver
Vehicle-Mounted Collector Equipment	1	$ 7,000.00	$ 7,000.00	4 Weeks	Neptune MRX Mobile Data Collector
Backup Powered Gateway	1	$ 9,500.00	$ 9,500.00	5 Weeks	Recommended 1 backup on hand
Optional Services					
Optional 5-Year Gateway Entitlement	-	$ 4,000.00	$ -		Upfront Cost per Gateway
Meter Box Lids					
363 1/2 w/ R900 Antenna Hole	-	$25.75	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
437 w/ R900 Antenna Hole	-	$34.50	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
438 w/ R900 Antenna Hole	-	$48.25	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
655 1/2 w/ R900 Antenna Hole	-	$58.50	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
666B w/ R900 Antenna Hole	-	$71.70	$ -	5-6 months	Current Market Cost. Pricing subject to 15% Increase
Subtotal			**$ 16,500.00**		
7.75% Sales Tax NOT INCLUDED					
Total Recommended Optional Equipment Costs			**$ 16,500.00**		

Assumptions:

Sales Tax NOT INCLUDED & only applicable to hardware, not services

Meter box lids are optional. District can utilize touchpad hole in existing meter box lids

TOTALS IN BLUE

FERGUSON
WATERWORKS