



AMI Water Meter Replacement Project

Town of North Reading, Massachusetts

Water Meter Project

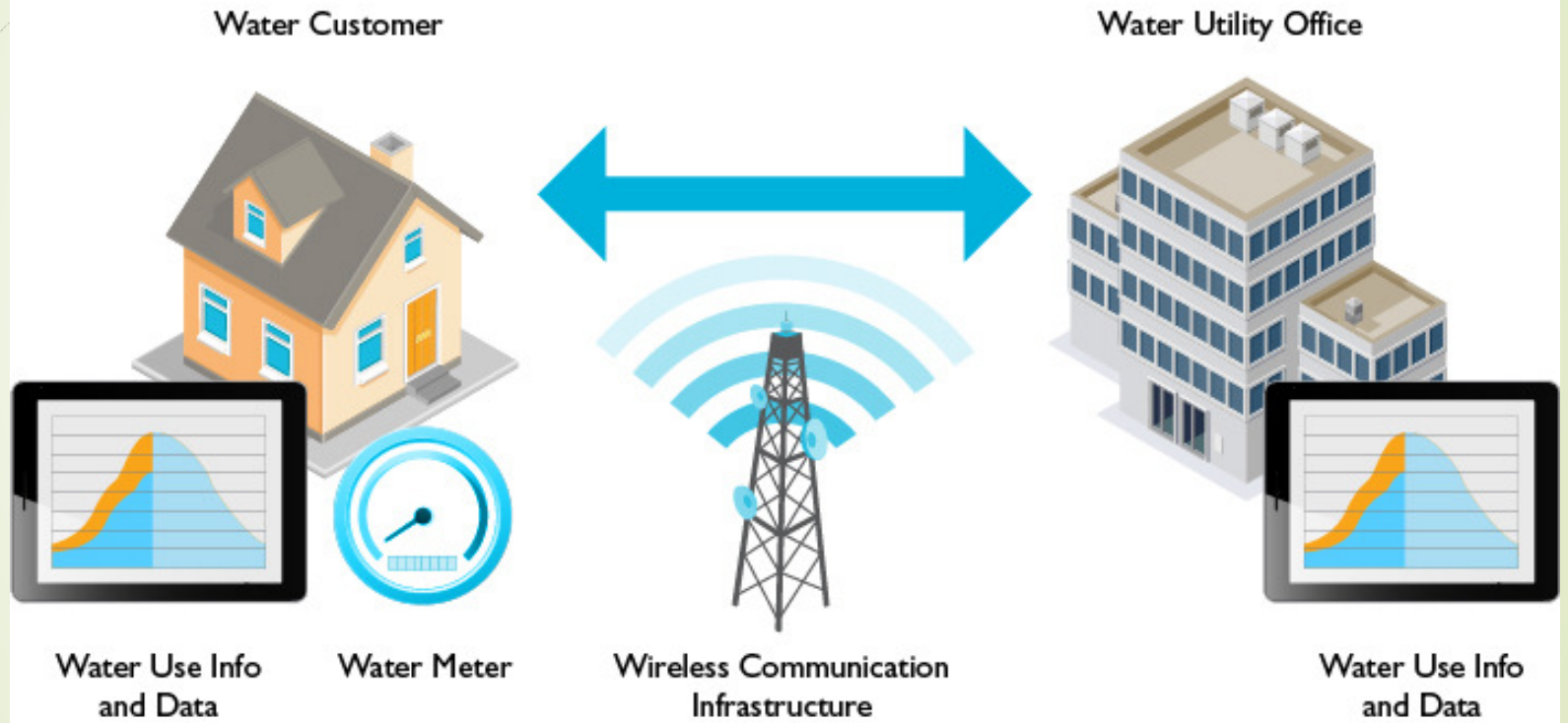
Replace the Town's existing water meters with a new AMI (Advanced Metering Infrastructure) system.

- 4,900 commercial and residential meters Town wide
- Most meters dated back to the last Town-wide meter replacement project in the early 1990's
- Funding approved through Town Meeting, financed through the Water Enterprise

- Town of North Reading
 - Owner
- Weston & Sampson Engineers, Inc.
 - Engineer
- Ti-Sales
 - Supplier
- Theilsch Engineering/USI Services
 - Installer



Automated Meter Infrastructure and Smart Water Metering





Old Meter System

Meter Resolution
To 1,000 Gallons

Meter Reading Frequency
4 Readings per Year

Meter Reading Methodology
ARB-V Pinblocks
Drive By Radios
Manual Reading
Non-Standard Meters

New Meter System

Meter Resolution
To 0.1 Gallons

Meter Reading Frequency
24 Readings per Day
= 8,760 Readings per Year

Meter Reading Methodology
Fixed Network Radios
On Demand Meter Readings



North Reading Meter Reading Software

MUNIS
Water Billing
System

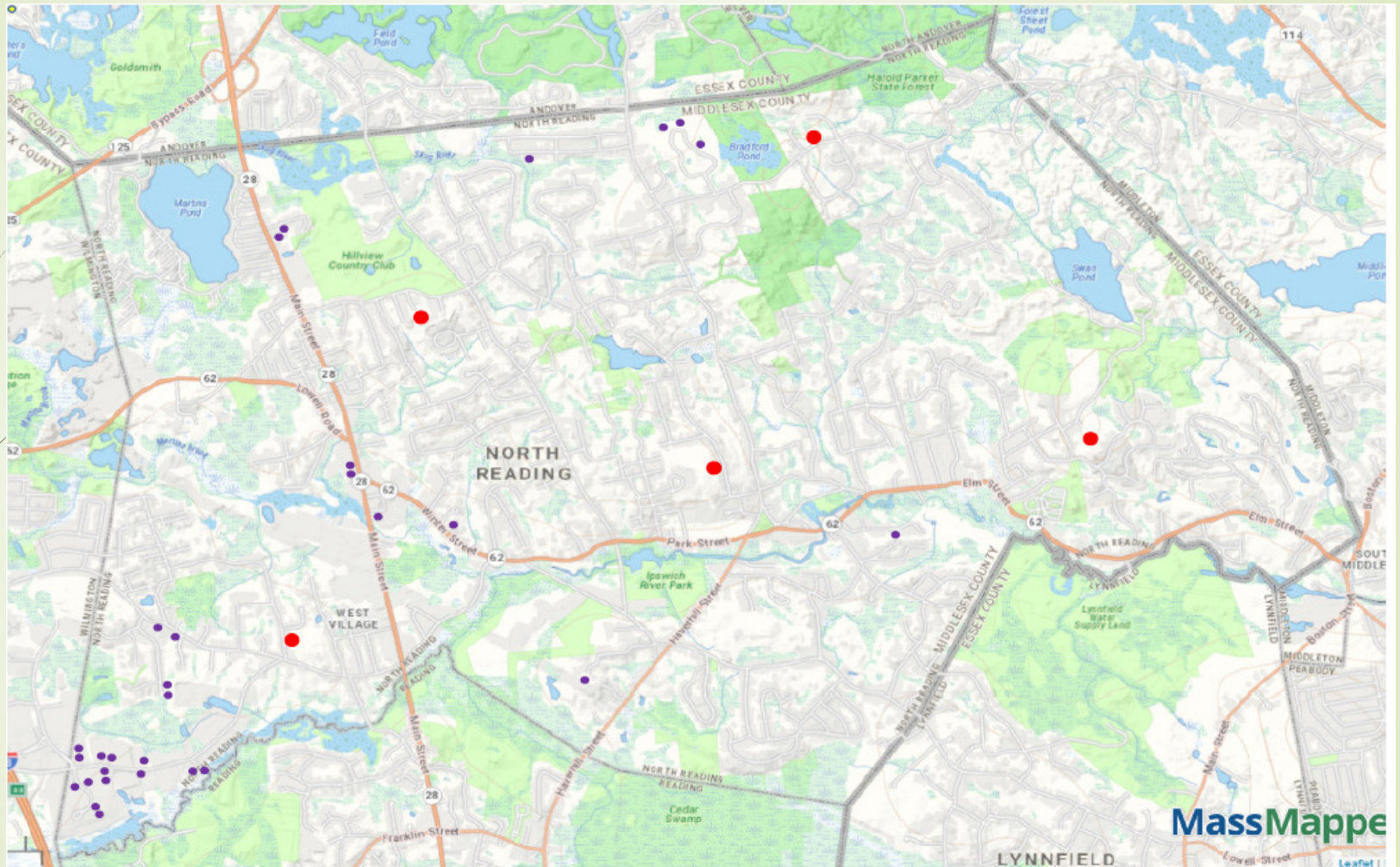
- Quarterly Water Bills
- Final Water Bills
- Account Maintenance
- Meter Maintenance
- Consumption History

Neptune 360
Meter Reading
System

- Hourly Meter Readings
- Top 10 Water Users
- Data Logging
- Daily System Consumption

WaterSmart
Customer Interface
Platform

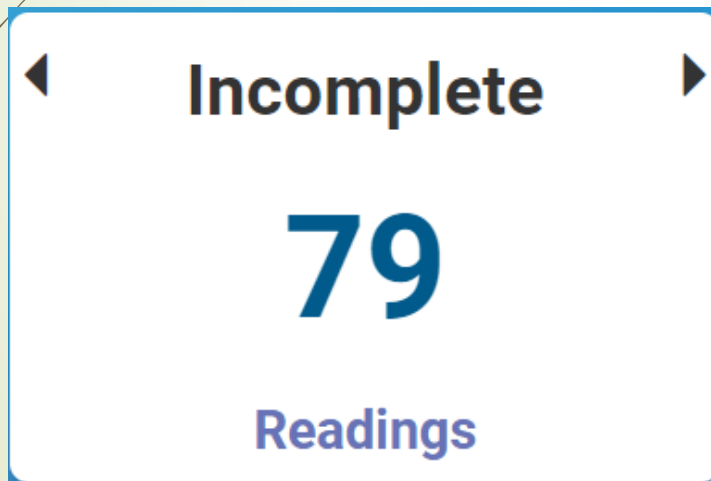
- Customer Access to Consumption Data
- Better Graphical Presentation of Data
- Recommendations to Reduce Water Use
- Consumption Reports - Irrigation



North Reading Meter Reading Gateways (Collectors)

North Reading Meter Reading Experience

The old meters took approximately **six weeks** for an employee to “walk” the Town to collect meter readings . . .



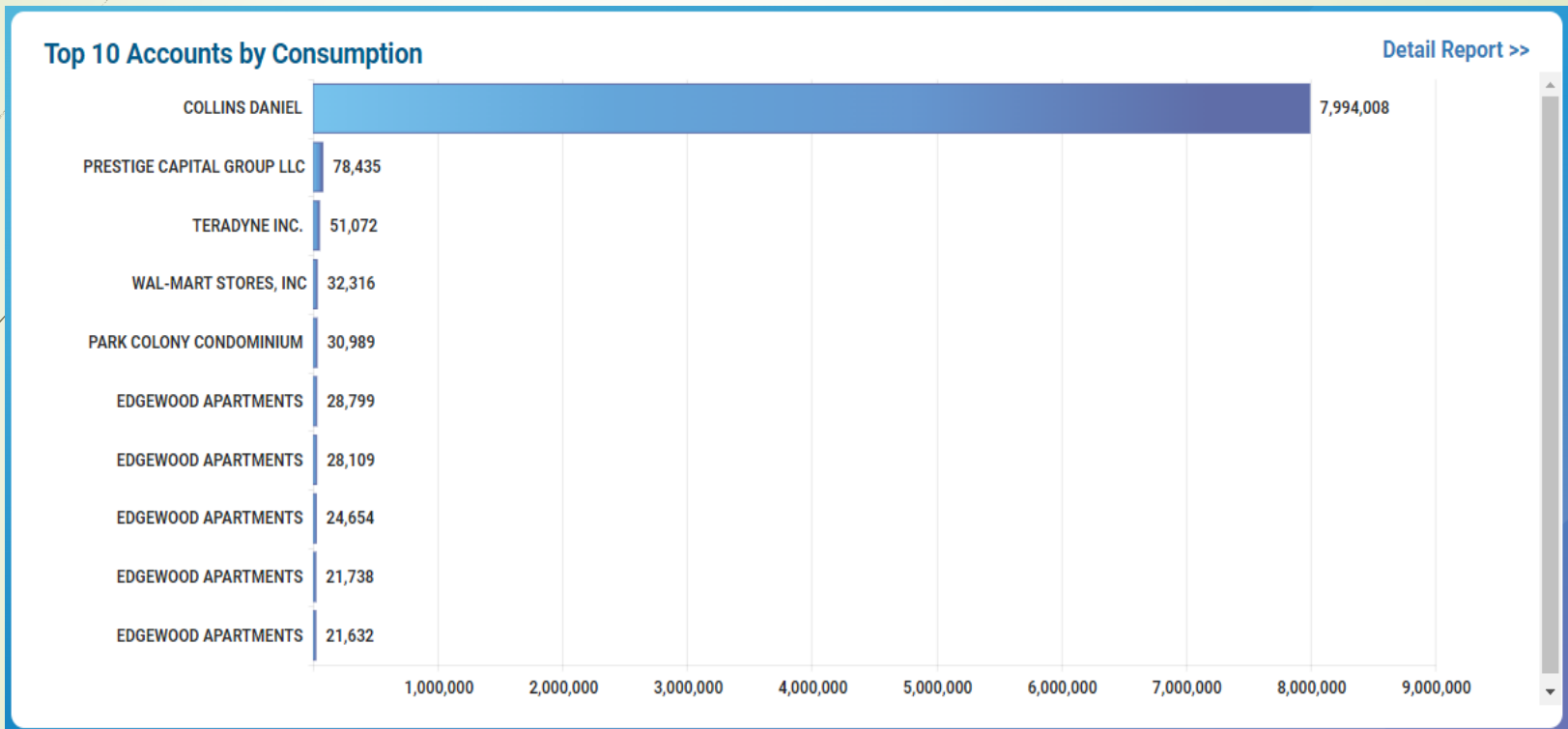
. . . with the new meters, we are able to collect approximately 98.5% of our meter readings in **six seconds!**



Why Are Some Meter Readings Incomplete?

- **Location Issues**
 - Too remote from a Collector
 - Underground installations (Manholes/Pits)
 - Approximately 30 locations, varies seasonally
 - Collected using drive-by technology
- **Meter Never Updated**
 - Plumbing issue – old iron pipes
 - Resident reluctant to install a Smart Meter
 - Approximately 30 locations
 - Manually read
- **Meter Issues**
 - House demolition/construction
 - Broken wire between the meter and the radio
 - Meter register or radio issue
 - Appointment for repairs

Neptune 360



Neptune 360 – Monthly Use

Account Number

0713500

Address

174 PARK STREET

Latest Reading

02957395

11/29/2021 7:56:31 AM

Current Meter Information

MIU ID [More MIUs >>](#)

1550654734

Meter ID [More Meters >>](#)

37721448

Meter Size

0062 "

MIU Status

Active

Meter Type

0002

Unit of Measure

Gallons

From: 11/1/2020

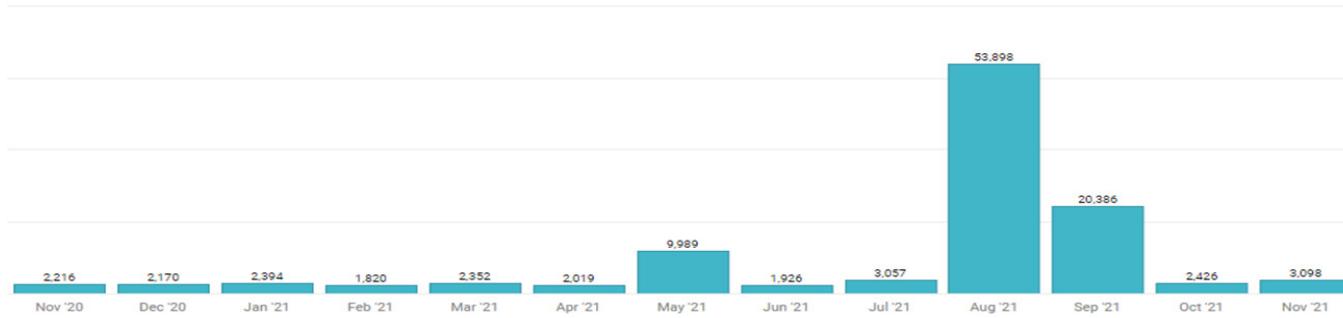
To: 11/28/2021

Actual

Estimated

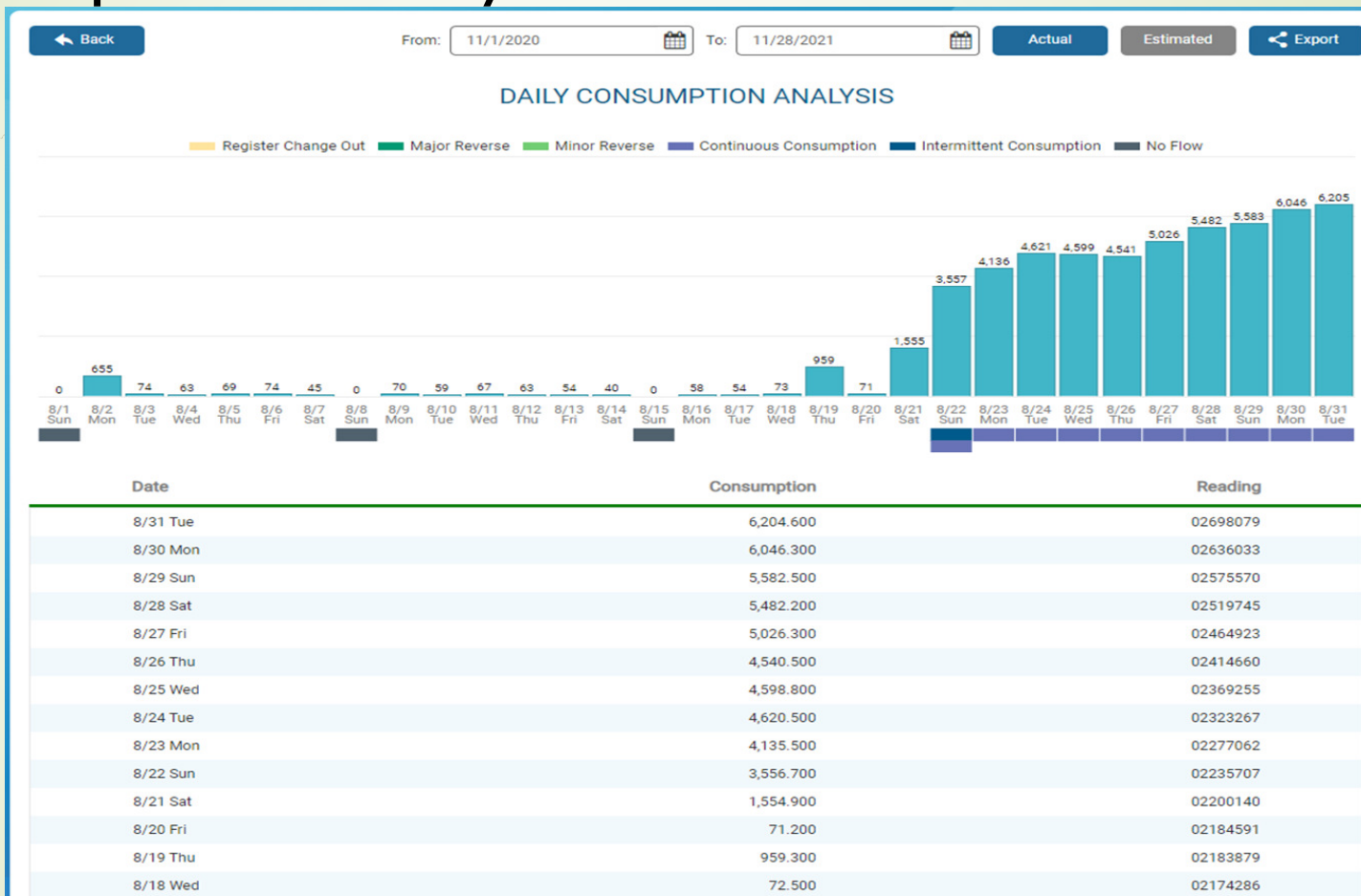
Export

MONTHLY CONSUMPTION ANALYSIS

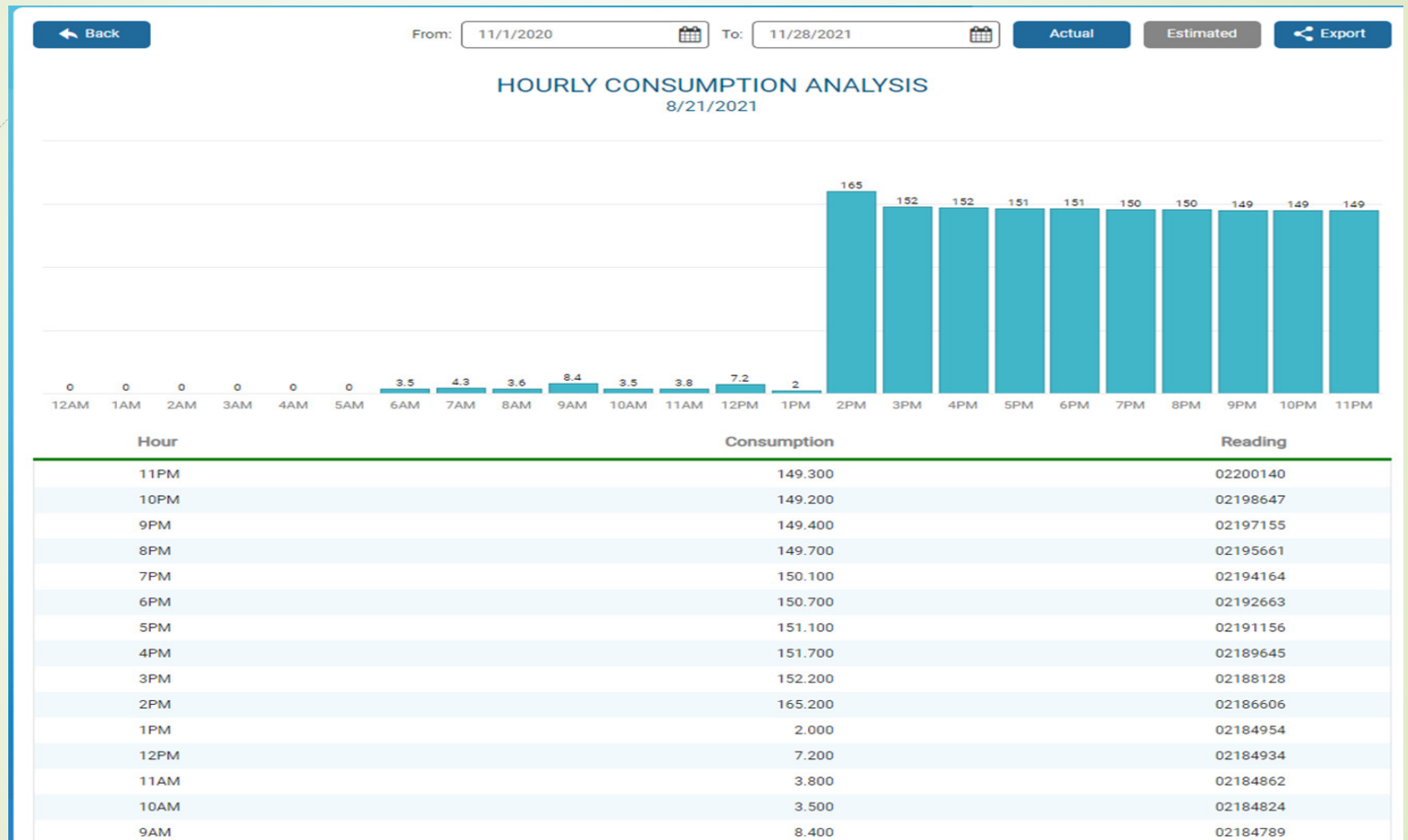


Date	Consumption
Nov '21	3,097.800
Oct '21	2,425.500
Sep '21	20,386.200
Aug '21	53,898.000
Jul '21	3,057.200
Jun '21	1,926.100
May '21	9,989.200
Apr '21	2,019.000

Neptune 360 – Daily Use



Neptune 360 – Hourly Use



WaterSmart Customer Portal

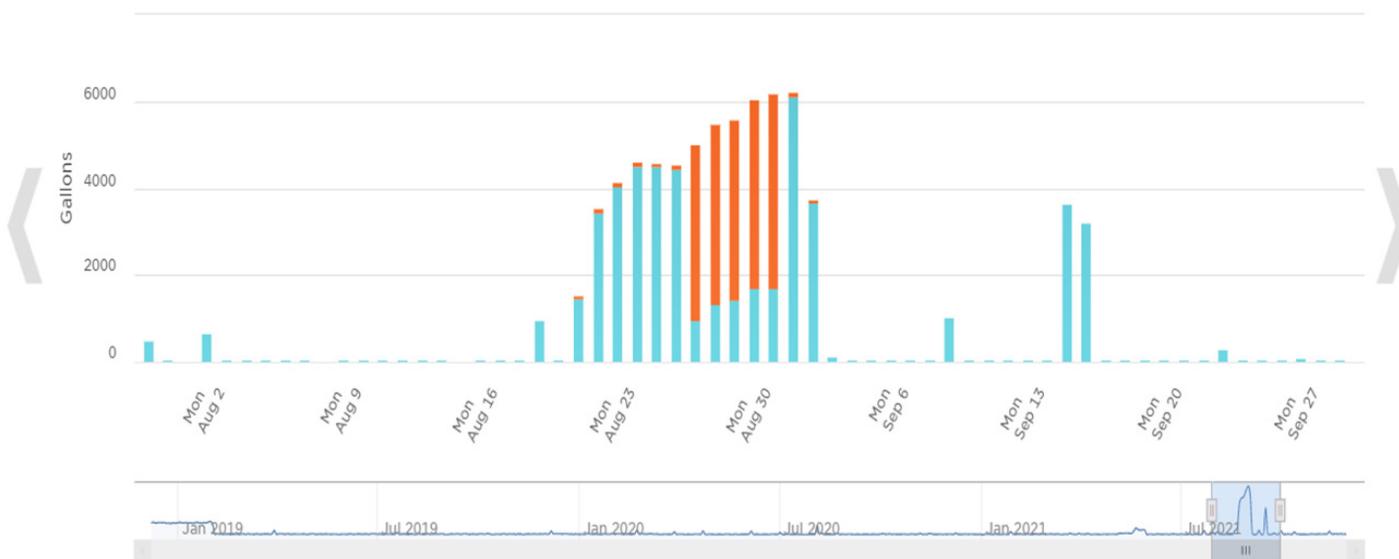
Use History

BILLING **AMI** LEAKS

Jul 29, 2021 — Sep 29, 2021

DAY WEEK 2 WEEKS **2 MONTHS** YEAR

● Normal Use ● Possible Leak ● Timed Irrigation ● Data Unavailable



Total
73,963 Gallons

Possible Leak
21,903 Gallons

Timed Irrigation
0 Gallons

WaterSmart Customer Portal



WaterSmart Customer Portal

View & Pay Bills

\$2,306

Due Dec 17, 2021

[View Bill](#)

[Compare your current bill to recent past bills.](#) -14% ↓



My WaterScore

Take Action

Aug 17 - Nov 15

You used more water than similar households.

[Who am I compared to?](#)



Notifications

[Reminder](#) ▼

Want Better Results?

Complete your home water-use p...
[read more](#)

[Announcement](#) ▼

Get help understanding if your bill is higher than normal

Evaluate your bill, online, any tim...
[read more](#)

My Daily Use

1,417

Gallons Per Day

[View use](#)

[Compare your past use for this billing period.](#) 7% ↑



Recommended



Mulch under shrubs, bushes, and trees

Savings up to

63 GPD \$221/year

[See more](#)

WaterSmart Portal – Irrigator Export

City	Zip Code	Account Number	Irrigation Days In Last 7 Days	Irrigated within 48 hours of rain	GPD
North Reading	1864	0407300-31932	7	No	138
North Reading	1864	0407650-201487	6	No	352
North Reading	1864	1060300-31323	6	No	274
North Reading	1864	0213240-81373	6	No	256
North Reading	1864	0491100-201748	6	No	224
North Reading	1864	1107700-31983	6	No	202
North Reading	1864	1058800-203978	6	No	201
North Reading	1864	0905219-202997	6	No	189
North Reading	1864	1056120-203929	6	No	185
North Reading	1864	0932300-203149	6	No	183
North Reading	1864	1045400-45433	6	No	174
North Reading	1864	0604500-45311	6	No	171
North Reading	1864	0630300-84964	6	No	170
Andover	1864	0116906-35579	6	No	169
North Reading	1864	1131000-204441	6	No	164
North Reading	1864	0501400-201784	6	No	159
North Reading	1864	1020600-24543	6	No	158
North Reading	1864	1122800-204326	6	No	154
North Reading	1864	1081000-204038	6	No	146
North Reading	1864	0638100-202458	6	No	142
North Reading	1864	0121300-60249	6	No	140
North Reading	1864	0502690-48707	6	No	129
North Reading	1864	0704460-44035	6	No	127
North Reading	1864	1140120-80098	6	No	126



Improved Outreach to Customers

Based on record high water demand within the North Reading water system, Stage 1 Water Use Restrictions have been enacted effective June 19, 2020. High water use over an extended period, such as we have experienced, can lead to insufficient water in our storage tanks for fire prevention.

These restrictions consist of the following mandatory water conservation measures:

Lawn watering is restricted to two days per week before 7:00 AM and after 7:00 PM. Residents with ODD numbered addresses may water lawns on Tuesdays and Fridays at these times. Residents with EVEN numbered addresses may water lawns on Wednesdays and Saturdays at these times.

You are receiving this notice as our records show you are watering more than two days in the past week. The daily water use over the past seven days at this property has averaged 2,123 gallons per day. **Projecting this rate of water over an entire billing quarter would result in a water bill of \$3,358 for this quarter.** For comparison, the water use for the February to May billing quarter averaged 79 gallons per day at this property.

If you have already modified your watering schedule, I want to thank you for your help. If you are watering more than two days per week, I am urging you to modify your lawn watering practices to comply with these restrictions, and to verify that your irrigation system controller settings match these restrictions. It is our hope that compliance with the Stage 1 restrictions will help to avoid the need for more stringent water use restrictions later in the summer.

Thank you in advance for your assistance in this matter.



Lessons Learned

- Any meter replacement project will have headaches
 - Funding – meter replacements represent a significant cost and can impact water rates
 - Implementation – you will be interfacing with every customer – entering their homes
- Smart Meter technology provides significant benefits to both the water supplier and the customer in understanding where water is being used
 - Leak detection
 - Burst pipes
 - Irrigation
 - Customer Service
 - Time savings
 - Collecting meter readings
 - Diagnosing issues



Questions?