

Preparing CAPACITY ANALYSIS REPORTS for WATER TREATMENT SYSTEMS



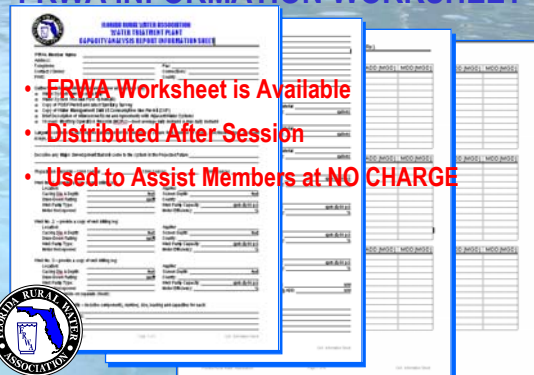
Easy Steps for Gathering Information
Analyzing Data & Capacities
Projecting Future Demand
Recommending Improvements

GATHERING INFORMATION


- Information Should be Available
- Should be Organized Anyway
- Good Management Practice & Planning Tool
- Reduces Consulting Fees
- Helps You Understand Your Own System
- Helps You Look Good with Governing Board



FRWA INFORMATION WORKSHEET



- **FRWA Worksheet is Available**
- **Distributed After Session**
- **Used to Assist Members at NO CHARGE**



BASIC INFORMATION

- FRWA Member Name & Address
- Owner Name & Address
- Telephone & Fax
- PWS Number
- Connections
- County



MONTHLY OPERATION REPORT FOR PWSs TREATING RAW GROUND WATER OR PURCHASED FINISHED WATER

See page 4 for instructions

I. General Information for the Month/Year

PWS Name: _____ PWS Identification Number: _____
 PWS Type: Community Non-Treated Non-Community Treated Non-Community Community
 Number of Service Connections at End of Month: _____ Total Population Served at End of Month: _____

PWS Owner: _____
 Contact Person: _____ Contact Person's Title: _____
 Contact Person's Telephone Number: _____ City: _____ State: _____ Zip Code: _____
 Contact Person's E-Mail Address: _____ Contact Person's Fax Number: _____

II. Water Treatment Plant Information

Plant Name: _____ Plant Telephone Number: _____
 Plant Address: _____ State: _____ Zip Code: _____
 Capacity of Water Treated by Plant: _____ () Raw Ground Water
 Treatment Method(s) Used: _____
 Permit Number (see subsection 62-009.10(4)(a), F.A.C.): _____
 License Number: _____
 License Class: _____ License Number: _____ Director's Name(s) Worked: _____
 Licensed Operator: _____
 Other Operators: _____

III. Certification by Lead Chief Operator

I, the undersigned, being the lead chief operator licensed in Florida, am the lead chief operator of the water treatment plant identified in Part I of this report. I certify that the information provided in this report is true and accurate to the best of my knowledge and belief. I certify that all drinking water treatment chemicals used at this plant conform to NSF International, Inc. or other applicable standards referenced in subsection 62-075.12(7), F.A.C. I also certify that the following additional operations records for this plant were prepared each day that it treated water: certified or tested this plant during the month indicated above. (1) records of amount of chemicals used and chemical feed rate, and (2) if applicable, appropriate treatment process performance records. Furthermore, I agree to provide these additional operations records to the PWS owner or the PWS owner's service fees, together with copies of this report, as a component of service fee, at least two times.

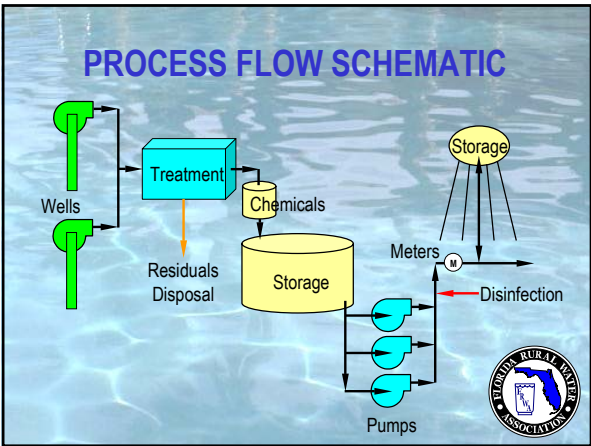
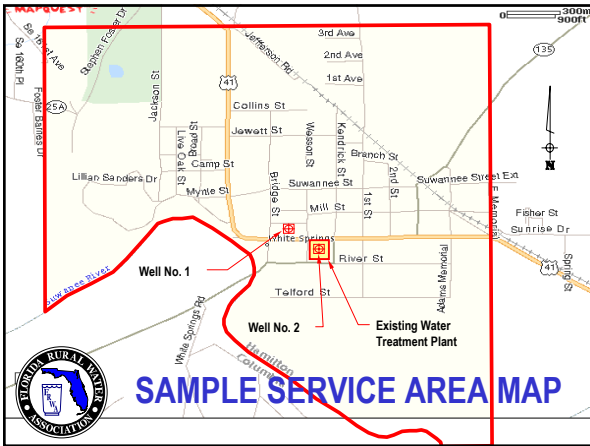
Signature and Date: _____ Printed or Typed Name: _____ License Number: _____

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SERVICE AREA MAP

- Should have a Service Area Map
 - ✓ Shows Streets & General Neighborhoods
 - ✓ Shows Water Plant, Tanks & Wells
 - ✓ Service Area Boundary
- Water System Map – Also Important to Good Utility System Operation



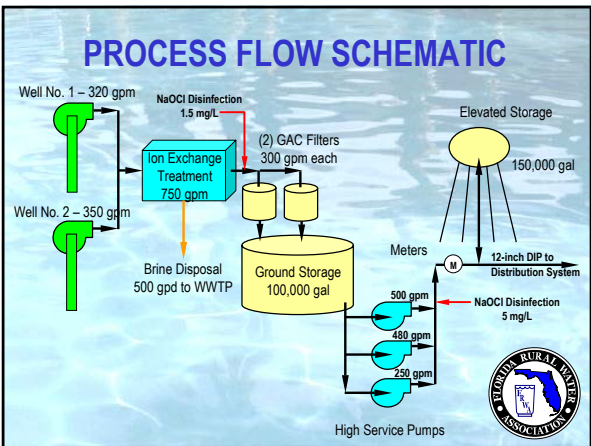


PROCESS FLOW SCHEMATIC

- Graphic Display of Water Treatment System
- Shows Major Equipment Relationships
- Chemical Injection Points
- Visualize Treatment Process

OPTIONAL

- List Component Sizes / Capacities
- Identify Pipe Type & Size



DATA GATHERING

MAKE COPIES OF:

- FDEP Permit
- Most Recent Sanitary Survey
- WMD Consumptive Use Permit (CUP)
- Interconnection Agreements with Adjacent Water Systems
- 10-years Monthly Operation Records (MORs)

MONTHLY OPERATION REPORT FOR PWSs TREATING RAW GROUND WATER OR PURCHASED FINISHED WATER														
PWS Identification Number: _____ Plant Name: _____														
Daily Data for Each Month of Year														
Date of Month	Day of Month	Time of Day	Flow (gpm)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)	Flow (MGD)
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10-Years Monthly ADD & MDD

* Refer to the instructions for this report to determine which places must provide this information.

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MORE INFORMATION

FIRE PROTECTION

- Largest Commercial Building size in square feet
- Number of stories
- Class of Construction
 - All Frame
 - Joisted Masonry
 - All Masonry Non-Combustible
 - Fire Resistive
- Describe Usage / Occupying Business
- Exposure of Building to Surrounding Structures



POPULATION

- Census Records for 1980, 1990 & 2000
- Any Major Development That Will Come to the System in the Projected Future?
- Projected Water System Expansion to New Customers?



WATER SUPPLY

- Number of Wells
- Well Drilling Log
- Location
- Aquifer
- Casing Diameter
- Casing Depth
- Screen Depth
- Total Well Depth
- Draw-down Rating gal/ft
- Well Pump Type
- Well Pump Capacity gpm @ 60 psi
- Motor Horsepower
- Motor Efficiency %



TREATMENT COMPONENTS

- Describe Every Component
 - ✓ Type of Treatment
 - ✓ Number of Units
 - ✓ Size (dimensions, volume, flow, etc.)
 - ✓ Make & Model Info
 - ✓ Loading / Rating / Capacities for Each



WATER STORAGE

- Describe Tanks, Number, Size & Capacities for Each Tank
 - ✓ Type of Tank
 - ✓ Location
 - ✓ Diameter
 - ✓ Construction Material
 - ✓ Depth
 - ✓ Useful Capacity



HIGH SERVICE PUMPS

- Make, Model & Impeller Info
- Copy of Pump Curves
- Discharge Diameter
- Pump Type
- Drive Type
- Pump Capacity gpm @ 60 psi
- Motor Horsepower
- Motor Efficiency %



AUXILIARY / STAND-BY POWER

- Generator Type & Manufacturer
- Generator Size (kW)
- Generator Fuel Tank (gallons)
- Power Needs at Average Daily Demand
- Switch-Gear Type – Auto or Manual



Known Water Supply, Treatment, Storage & Distribution Deficiencies?

- Supply?
- Storage?
- Treatment?
- Pumping
- Chemicals?
- Distribution?
- Other?

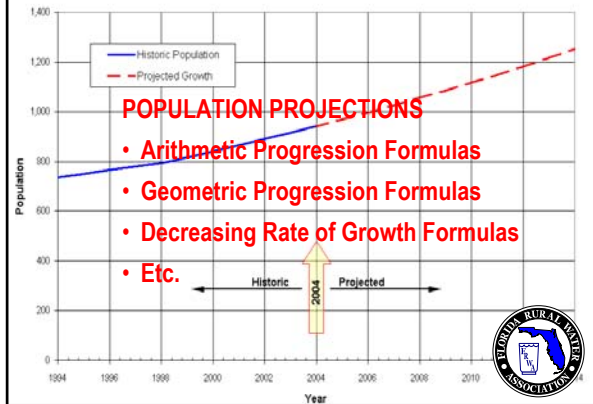


ANALYSIS OF DATA

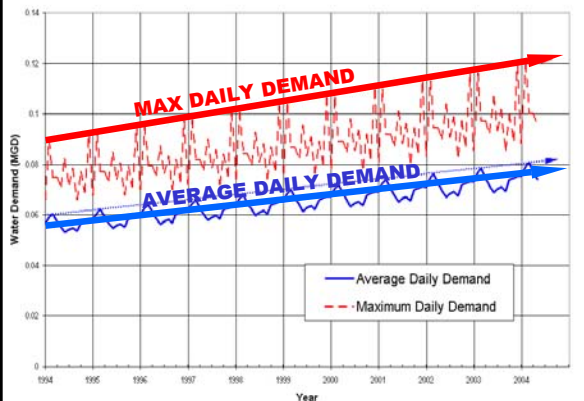
- Historical Population Growth & Projections
- Historical Water Demands & Projections
 - ✓ 10-yr's of MORs
- System Component Capacities
 - ✓ Water Supply Wells
 - ✓ Treatment & Chemicals
 - ✓ High Service Pumps
 - ✓ Storage Tanks
 - ✓ Auxiliary Power



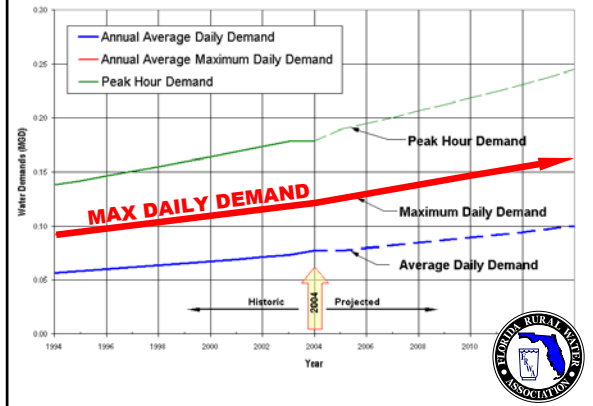
Historic and Projected Population



Historic Water Demands



Existing and Projected Water Demands



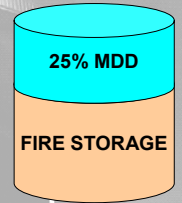
CAPACITY ISSUES

- Largest Well Out-of-Service per 62-555.315 for ADD
 - Systems over 350 population or 150 connections
- Major Treatment Components Redundancy for MDD
 - Lime Softeners, Filters, RO Units, etc.
 - Reasonable Spares, Parts, Backup Acceptable
- High Service Pump Largest Out-of-Service per 62-555.332(15) for PHD or (NFF + MDD) @ 20 psi min.
 - Systems over 350 population or 150 connections
 - Installed / Uninstalled backup acceptable



STORAGE CAPACITY

- Percentage of Max Daily Demand PLUS Fire Storage Volume
- OR -----
- Equalization Storage PLUS Fire Storage Volume



STORAGE CAPACITY CALCS

- Must Be 25% Max Daily Demand (MDD) PLUS Fire Storage Volume per 62-555.320(19)

$$25\%MDD + FS$$

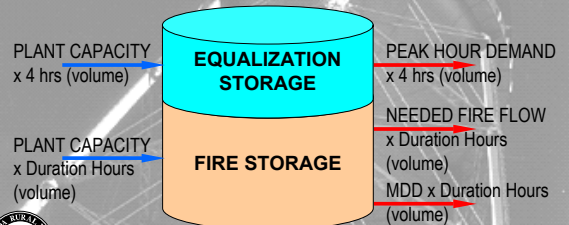
----- OR -----
- Equalization Storage PLUS Fire Storage

$$ES + FS$$
- $ES = [\text{Peak Hour Demand (PHD)} - \text{Total Plant Capacity}]$ for 4 hours
- $FS = [\text{Needed Fire Flow (NFF)} + MDD - \text{Total Plant Capacity}]$ for Fire Duration



STORAGE CAPACITY (Alternate)

- Alternate Calculation



FIRE PROTECTION

- Fire protection is a Community Choice
- Must Decide Whether to Provide Protection
 - ✓ Or Not – or – How Much Protection
- Size Distribution System Components
 - ✓ Supply, Pumps, Water Lines
 - ✓ Hydrants, Fittings & Appurtenances
 - ✓ Storage Facilities
- Fire Department & 911 Issues



FIRE PROTECTION (cont.)

- Larger Systems Marginal Effect on Sizing
- Smaller Systems These Requirements Can Correspond to a Significant Increase in the Size (& Cost) of Many Components!

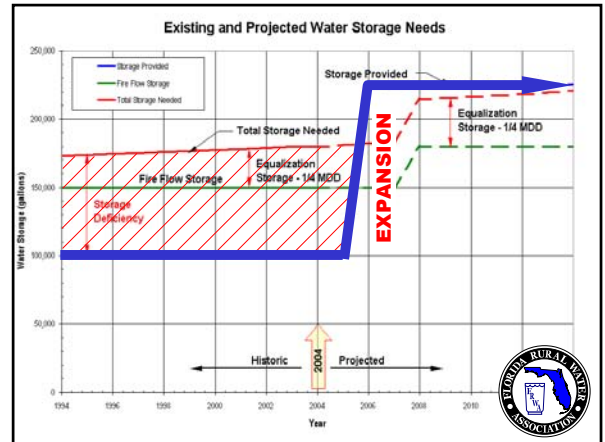
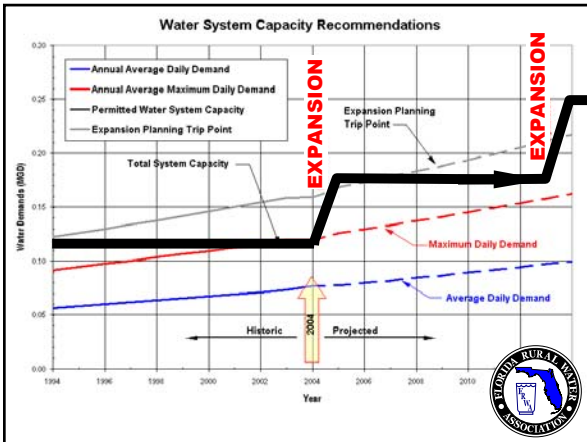


FIRE PROTECTION (cont.)

- Fire Protection is Not Mandated by FDEP
- **BUT** Gets Involved With the System Components As They Are Related to
 - ✓ Water Quality, Capacity & Supply
- Systems with Hydro-Pneumatic Tanks Should Not Claim to Provide Fire Protection, per “Ten States Standards” & 62-555.320(20)

RECOMMENDATIONS

- Propose Addressing Any System Deficiencies
- Forecast When System Expansion is Likely
- Begin Planning When 75% Capacity Reached
- Takes 3 years for Plant Expansion
 - ✓ Loan & Grants = 12 to 18 months
 - ✓ Engineering & Permitting = 6 to 12 months
 - ✓ Construction = 1 year



CAPACITY ANALYSIS REPORT SUMMARY

- Gathering Information & Data
- Population Historical Growth & Projected
- Water Demands Historical & Projected
- System Component Capacities
 - ✓ Water Supply Wells
 - ✓ Treatment & Chemicals
 - ✓ High Service Pumps
 - ✓ Storage Tanks
 - ✓ Auxiliary Power
- Recommending Improvements



CAR CERTIFICATION

- Written & Signed Statement
- Authorized Representative of Water System
- Utility is Meeting & Intends to Meet CAR Schedule
 - ✓ Design, Permitting, & Construction
 - ✓ New or Expanded Facilities
 - ✓ Recommended in CAR



