

# GWR GOES INTO EFFECT DECEMBER 1, 2009

By David J. Buyens, PE and Salah F. Albustami, PE



On November 8, 2006, the Environmental Protection Agency (EPA) issued its final Ground Water Rule (GWR) via the Federal Register in the form of revisions to 40 CFR Parts 9, 141, and 142. Hence, all Florida Public Water Systems (PWS) that use groundwater will have had to comply with the GWR beginning December 1, 2009. In large part, because the Florida Department of Environmental Protection (FDEP) will not incorporate the new Rule into the Florida Administrative Code until sometime in late 2010, a year after the GWR

goes into effect, most PWS will find themselves scrambling to attain compliance in a short time with minimal support.

The GWR was promulgated to provide for increased public health protection against bacterial and viral pathogens and contains requirements for sanitary surveys, groundwater source microbial monitoring, treatment techniques, compliance monitoring, and public notification. As in the past, the sanitary surveys are primarily the responsibility of the FDEP or local health departments, while the PWS are responsible for the other requirements.

## Who, When, and How to Comply?

All PWS that use only groundwater sources, consecutive PWS (PWS that supply other PWS), or PWS that use both surface and groundwater sources\* (including community and non-community systems regardless their sizes) are required to comply with the GWR.

Figure 1 depicts the compliance timetable for implementation of the new rule, beginning December 1, 2009.

*\*Except systems that combine all of their groundwater with surface water prior to treatment of surface water under Surface Water Treatment Rules.*

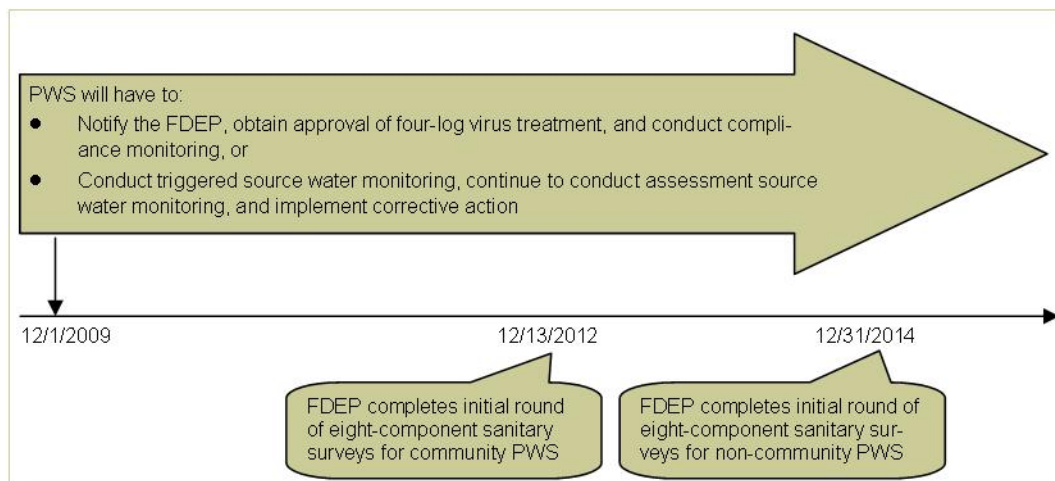


Figure 1 Implementation Timeline

## Two Paths Toward Compliance

The GWR provides two options for attaining compliance: either a four-log virus treatment of the groundwater source, or source water monitoring. The most advantageous approach will depend largely on characteristics of the PWS.

With regard to the four-log virus treatment of the groundwater prior to consumption, the PWS can use any of the treatment techniques (chlorine, filtration, and UV) alone or combined to achieve the needed level of treatment. The FDEP has provided draft guidelines (Four-Log Treatment of Ground Water) that explain the use and level of compliance of the above treatment techniques. However, a professional engineer registered in the State of Florida must submit a plan to the FDEP and obtain approval to avoid source water monitoring, the second option. Both continuous and daily monitoring of the processes may be required. Hence, small PWS that are not required to have water plant operators on site will not likely be able to utilize this option. Consecutive systems (PWS that supply other PWS), those who use lime-soda processes to soften 100% of the water, or other larger PWS are prime candidates for this option.

The second option for compliance is the default, source water monitoring. Samples must be analyzed at least monthly representing all wells. Source water sampling is required for two reasons: either routine assessment samples, or triggered by a positive coliform result from the current distribution sampling. Although such additional sampling will necessitate additional expense, the greatest potential impact is the Tier 1 notification (television and radio) required of any source sample testing positive. No amount of re-testing or corrective action can alleviate the Tier 1 notification process—only the laboratory admitting to an error can negate notification. Additional sampling pertains only to corrective action requirements.

By December 31, 2012 for community PWS, and two years subsequent to that for non-community PWS, it will be necessary to complete the initial eight-element sanitary survey for all PWS under the GWR. Prior to the date deadlines, PWS will have to provide existing information that is requested by the FDEP, enabling the FDEP to conduct a sanitary survey, which must include evaluation of following eight elements, as applicable:

1. Source
2. Treatment
3. Distribution System
4. Finished Water Storage
5. Pumps, Pump Facilities, and Controls
6. Monitoring, Reporting, and Data Verification
7. PWS Management and Operation
8. Operator Compliance with FDEP Requirements

### **Pathogens Monitored**

Three analytical methods are accepted for triggered or assessment monitoring of source water for fecal indicators: E. coli, Enterococci, or Coliphage. Most PWS will probably analyze for E. coli because of familiarity and cost. The cost of the Enterococci method is about 50% higher than the E. coli analytical procedure. Still more expensive is the Coliphage - up to 15 times the cost of E. coli. However, Coliphage might be a better indicator than the other two because Coliphage more closely resembles viruses in size and shape. Hence, Coliphage might be transported through aquifers similar to viruses. Also, it is unlikely that Coliphage can grow in the warm Florida environment, as might the other two. False positives would be less likely when analyzing for Coliphage. The choice is at the discretion of the PWS doing the sampling.

### **Conclusion**

Only about 11% of PWS in Florida experience one or more total Coliform positive results when routine samples are analyzed from their distribution system. Hence, eight of nine systems should not have to perform triggered sampling in any given year. Assuming the percentage of systems sampling raw water for fecal indicators is no higher, most systems will not experience ill effects from the GWR other than increased analytical costs. The remainder of the PWS may require corrective actions, possibly including water plant upgrades. For example, some wells may have to be replaced or new treatment processes may need to be engineered and brought on line to meet the GWR. Each system should have an idea of how well their facility will fare and should take this assessment into account when deciding how to comply with the GWR.

*Dave Buyens is a Senior Project Manager within the Civil Department of Chastain-Skillman's Lakeland office, and has been with the firm for 17 years. His work focuses on private and municipal site development and often specializes in utility design. Dave holds a Bachelor of Science in Chemistry from Purdue University and a Master of Science in Engineering from the University of South Florida. He can be reached at (863) 646-1402 or [dbuyens@chastainkillman.com](mailto:dbuyens@chastainskillman.com).*

*Sal Albustami is a Senior Project Engineer within the Environmental Department of Chastain-Skillman's Lakeland office. Sal earned his Master's Degree from the University of South Florida, and is currently working toward his PhD at the same university. He can be reached at (863) 646-1402 or [salbustami@chastainkillman.com](mailto:salbustami@chastainkillman.com).*