



**North Carolina Department of Health and Human Services
Division of Public Health**

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October 20, 2014

Nathaniel Hall, Environmental Health Supervisor
Burke County Environmental Health
110 N. Green St., P.O. Box 219
Morganton, NC 28655
Courier No. 15-01-04; Fax No. 828-432-2466

Subject: Review of Proposed Design Flow Reduction, Paddy's Creek Loop Campground, Lake James State Park, Burke County, NC, OWPB Project Number 2014-30
RE

Mr. Hall:

We have reviewed the information received from you in support of a proposed design flow reduction for the new wastewater system to serve the proposed tent camping loop at Paddy's Creek, Lake James State Park, received September 8, 2014, and revisions received September 16, 2014. It is our understanding that this camping loop is to serve 33 campsites, with no individual water/sewer services, and a common bathhouse plus one RV spot (host site). The "unreduced" flow per Rule .1949 would therefore be 3420 to 3475 gpd (depending upon whether the RV is a "Park Model" or "Standard" type RV).

Data submitted include monthly average flows on a per-camper basis from Stone Mountain State Park (May through September, 2007), and weekly flow and occupancy data from the South Mountain Family Campground (May 15th through August 18, 2014). These data sets are not complete [do not include at least 12-months of monthly data and at least 30 days of daily flow data from a comparable facility, as required to comply with Rule .1949(c)(1)]. However, they appear consistent with previous data sets we have reviewed that support some reduction, although not to the extent referenced in the letter to you from Jeffrey Smith, P.E., whom will apparently be doing the design for this system (he proposes 60 gpd/site in letter to you dated 8/27/14, and revised this proposal to 75 gpd/site in the letter to you dated 9/14/14). Smith's initial proposal is based on the "average" measured summer usage from Stone Mountain State Park (59 gpd), and doesn't reflect the application of a "peaking" factor to account for "normal" high-use days. Note that the basis for an adjusted flow based on water records, per Rule .1949(c)(1), is the average of the top 10% (e.g., top 3) flow days from the peak flow month.

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We have previously approved reductions (for drainfields only; not for tankage) to 70 to 80 gpd per tent campsite, based on use of extreme low flow fixtures. We agree that the data sets provided appear to support the revised proposed reduction to 75 gpd/site for the drainfield, contingent upon the proposed use of water conserving fixtures. Smith's 9/14/14 letter specifies water closets with dual-control valves (1.6/1.1 gallons per flush), waterless urinals, showers which use 1.5 gallons per minute, and sinks which use 0.5 gallons per minute. We concur with the flow reduction based upon these proposed fixture capacities although we agree that the lavatory spigots should also be required to be spring-loaded or sensor-activated. Furthermore, consideration should be given to using water closets which are "Energy-Star" rated (use no more than 1.28 gallons per flush). Tankage should remain based on the full "unreduced" design flow rate, as the solids-production level remains unchanged regardless of the use of water-conserving fixtures.

Note that these design flow recommendations do not account for the inclusion of dump-station waste into the system. If a dump station is also proposed (recommended if RV's are to utilize the campground), the dump station should be designed to be connected to a holding tank that receives no other source of wastewater other than RV holding tank waste. This station will require approval by the Division of Waste Management, and servicing by a licensed Septage hauler. If a dump station is alternately proposed to be connected into the Bathhouse wastewater system, or to its own subsurface system, additional design considerations will need to be taken into account and the system shall be treated as an Industrial Process Wastewater System, due to the presence of chemical additives and the high-strength characteristics of stored RV holding tank wastewater.

Please feel free to contact us if you have any questions pertaining to these comments, and how can be of further assistance with this project.

Sincerely,

Steven Berkowitz, P.E.
On-Site Wastewater Engineering

Cc: Jeffrey I Smith
Lance White
Alan McKinney