Requesting An Exception To The Filter Hydraulic Loading Rate (HLR)

Using a hydraulic loading rate (HLR) that is higher than those specified in Title 30 of the Texas Administrative Code (30 TAC) §290.42(d)(11)(B)(ii) or (iii) requires an exception. The TCEQ Technical Review and Oversight Team (TROT) staff requests the following data and operating parameters be monitored and recorded at the specified frequencies and reported to the TCEQ for verification that the requested filter HLR will not contribute to the degradation of potable water quality or quantity. The TROT staff strongly recommends that a full-scale demonstration protocol be submitted for review and approval prior to the actual full-scale demonstration. This will allow TROT to include all the information that needs to be collected and reported.

To request an exception to this rule, provide the following information to:

Technical Review and Oversight Team (MC 159)

Texas Commission on Environmental Quality

P.O. Box 13087

Austin, TX 78711-3087

* The submitted full-scale demonstration study report must contain at least **30 days** of data using a pretreatment scheme that will be used in full-scale operation at the requested filter HLR. Please note that these days do not have to be consecutive. The TCEQ does not want potable water discharged to waste.
* We strongly recommend that the filter be operated continuously for the duration of a filter run. However, shorter runs may be necessary if site conditions do not allow for continuous filter operation. This condition should be avoided as starting up a dirty or partially fouled filter may result in a treatment technique violation. If the filter is backwashed before a full filter run is completed, it does not provide accurate data at the requested filter HLR.
* At least one associated mixing, flocculation and clarification unit must be in operation at a flow rate that corresponds to the surface water treatment plant’s resulting full-scale production capacity at the requested filter HLR as noted in the full-scale demonstration submittal.
* At least one full-scale gravity filter must be in operation at the **requested filter HLR, or higher,** for at least 30 days, at a minimum period of eight hours per day. Please note that although more than one of the gravity filters may be piloted, data for at least one specific filter of each size, types of media, depths of media and L/d ratio (bed depth “L” divided by average filter grain effective size “d”) must be piloted for the entire filter full-scale demonstration study period at the requested filter HLR.
* The types of media, effective size range, and the depth of each type of media that makes up each piloted filter’s granular media must be provided to verify the L/d ratio.
* Report the as-built dimensions of each filter.
* The raw water turbidity, pH, temperature, and alkalinity levels must be monitored at least once each day and at any time it is suspected that the raw water quality may have changed.
* TCEQ requires that the maximum raw water turbidity, during the full-scale demonstration test, represent the historical high raw water turbidity level. At least one raw water turbidity event must reach the 95-percentile level of the raw water turbidity levels experienced over the previous five (5) years. If a natural event does not occur to produce the requested raw water turbidity spike, an artificially generated spike is acceptable as long as the method used receives prior TCEQ approval.
* The individual filter effluent (IFE) and combined filter effluent (CFE) turbidity levels at the end of each piloted filter run must be monitored and reported. The minimum, maximum, average, and 95 percentile turbidity levels must be reported for each piloted filter and the CFE.
* The rate-of-flow controllers or flow indicating devices and backwash flow indicating devices for each piloted filter must have been calibrated within the last 12 months before starting the filter HLR full-scale demonstration study.
* Each piloted filter’s flow rate must be monitored and reported at the beginning, middle, and end of each filter run and the corresponding filter HLR calculated and reported.
* The backwash procedure, or procedures if modified, must be reported in detail.
* The length of filter runs, unit filter run volumes, quantity of backwash water used per filter run, and the corresponding filter HLR for each full-scale demonstration study filter run must be monitored and reported.
* If a piloted filter’s IFE exceeds a turbidity level of **0.5 NTU at four hours after being returned to service from shutdown or backwash, the filter** must be taken out of service and backwashed. If this procedure is required more than once during any consecutive 24-hour operating period for a piloted filter or combination of piloted filters, treatment or operational corrections must be made before continuing the gravity filter HLR full-scale demonstration study. Each occurrence and treatment corrections made must be reported in detail.
* The operators must perform daily calculations to demonstrate that the required inactivation of viruses *Cryptosporidium* and *Giardia lamblia* is being continuously accomplished. The disinfectant residual must be monitored at the end of each disinfection zone at least once each day during peak hourly flow rates, and any time the pH or temperature of the water changes. **Additional Concentration Time (CT) calculations must be conducted every time the disinfectant residual at the end of a disinfection zone changes, or the flow rate through a zone changes, or the pH or temperature of the water changes.**
* Quality assurance and quality control data must be provided regarding monitoring equipment calibration methods, frequencies of calibration, and analytical procedures used.
* All collected data must be reported in comparison tables and graphs. The filter HLR full-scale demonstration study report must note and describe all changes in operating parameters and discrepancies in the collected data.

Please note, if the PWS installs new, or modified, equipment that will require approval from the Plan Review Team (PRT), the PWS must submit a protocol to TROT that clearly outlines how the 30-day full-scale demonstration study will be conducted. The protocol must include:

* + The maximum raw water turbidity level during the full-scale demonstration study must be representative of the historical high observed at the existing SWTP during the last five years.
  + The operators must perform daily calculations to demonstrate that the required inactivation of viruses and *Giardia lamblia* is being continuously accomplished. The disinfectant residual must be monitored for all the disinfection zones, at least once each day during peak hourly flow rates and any time the pH or temperature of the water changes. **Additional Concentration Time (CT) calculations must be conducted every time the disinfectant residual at the end of a disinfection zone changes, the flow rate through a zone changes, or the pH or temperature of the water changes.**
  + Submit data indicating how the plant ensures that proportioned flow is delivered to each clarification unit. If flow measuring devices are used, they must have been calibrated in the last 12 months.
  + Quality assurance and quality control data must be provided regarding monitoring equipment calibration methods, frequencies of calibration, and analytical procedures used.
  + All collected data must be reported in comparison tables and graphs. The pilot study report shall note and describe all changed operating parameters and discrepancies in the collected data.

At such time as the protocol is reviewed, TROT staff will approve a **temporary exception** which will require the full-scale demonstration be completed within 12 months of installation of the equipment and the WTP is in normal operations. If this deadline is not met, the temporary exception will expire, and a new exception must be requested.

Upon TCEQ approval of the protocol, the PWS must submit plans and specifications to PRT prior to construction and operation of the 30-day full-scale demonstration test.

* + If the PWS proposes to build a new water treatment plant, the PWS must submit a protocol before submitting plans and specifications to PRT. Please submit plans and specifications to:

Plan Review Team (MC-159)

Texas Commission on Environmental Quality

P.O. Box 13087

Austin, Texas 78711-3087

**If at any time during the full-scale filter HLR** demonstration **study the IFE or CFE violates any treatment technique requirements for turbidity as specified in Section §290.111 or manufactured specifications, the finished water must not be sent to distribution.**

**If at any time during the full-scale filter HLR** demonstration **study the disinfectant residuals are less than those required to achieve the required inactivation of *Giardia lamblia* and viruses for the current water quality conditions and flow rates, the finished water must not be sent to distribution.**