TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 30, 2021

Mr. Keyur Gorji, P.E., President
Water Equipment and Treatment Services
202 Industrial Boulevard, Unit 801
Sugar Land, Texas 77478

Re: Emerald Estates – PWS ID No. 2040069
Exception Request to Provide Innovative/Alternate Treatment
Full-Scale Demonstration Protocol for the Treatment of Radionuclides, Iron, and Hydrogen Sulfide using Dual Media Filtration
San Jacinto County, Texas
RN 102975778 | CN 605801604 | CN 605629138 | CN 605629120

Dear Mr. Gorji:

On December 3, 2020, the Texas Commission on Environmental Quality (TCEQ) received your letter dated December 2, 2020, requesting an exception to Title 30 of the Texas Administrative Code (30 TAC) §290.42(g) to conduct a 30-day full-scale demonstration study of aeration followed by dual media filtration with GreensandPlus™ catalytic oxidation media and anthracite for the removal of radionuclides and other regulated contaminants. According to your submittal, the process is designed to reduce the levels of iron, hydrogen sulfide and radionuclides (gross alpha and radium 226 and 228) in the water. This request is for the Emerald Estates public water system (PWS). The regulations in 30 TAC §290.42(g) state that innovative/alternate treatment processes will be considered on an individual, site-specific basis as a request for an exception in accordance with 30 TAC §290.39(l). Where innovative/alternate treatment systems are proposed, the licensed professional engineer must provide pilot test data or data collected at similar full-scale operations demonstrating that the system will produce water that meets the requirements of Subchapter F of this chapter. We understand the PWS is proposing a full-scale demonstration study based on sampling data collected during a one-day pilot study conducted in May 2020. Based on our review, we are **granting** approval to conduct a full-scale demonstration study where water from the treatment unit is sent to the distribution system if the proposed study protocol if amended as discussed in this letter. Because of the limited data provided, **the PWS must discontinue use of the treatment unit immediately after the demonstration study.**

This letter addresses only the exception to conduct a demonstration study of the proposed treatment, as required by 30 TAC §290.42(g), at the Plant 1-Admiralty Way water treatment plant (TCEQ Facility ID No. TP20183). This letter is not to be construed as approval for the construction of any PWS facilities. Please carefully review the outlined conditions of approval to ensure that sufficient data is collected to support a request for an exception for the full-scale treatment.

Description of Full-Scale Demonstration Study
The submittal identifies the source water as groundwater from Wells Nos. 3 and 4. However, you confirmed in an email on March 22, 2021 that the submittal's references to Well No. 3 correspond to Well No. 2 (TCEQ Well ID G2040069B) and Well No. 4 corresponds to Well No. 3 (TCEQ Well ID G2040069C). The proposed demonstration study will be at Plant 1-Admiralty Way (TCEQ Facility ID No. TP20183). The proposed treatment train was described as liquid chlorine injected at a 1 part per million (ppm) chlorine concentration, aeration through spray nozzles to oxidize dissolved iron and manganese and to strip volatile gas components, and dual media filtration (anthracite and GreensandPlus™). The proposed operating parameters for the filter are a loading rate of 3.5 gallons per minute per square-foot (gpm/ft^2) and a backwashing rate of 15 to 17 gpm/ft^2. The backwash water will be collected in the surge tank and then transferred to a holding tank with the help of a surge pump. The surge pump and backwash pump are both designed for the same flow rate of 100 gpm. The supernatant from the backwash water tank will be recycled back into the aeration/filtration vessel during normal operation.

According to the Texas Drinking Water Watch website, the gross alpha (excluding radon and uranium) concentration at the entry point ranged from 30 to 37 picoCuries per liter (pCi/L) in 2019 to 2020 which exceed the maximum contaminant level (MCL) of 15 pCi/L. The combined concentration of radium-226 and radium-228 at the entry point ranged from 11.06 to 13.84 pCi/L in samples collected in 2019 to 2020 which exceed the MCL of 5 pCi/L for combined radium-226 and radium-228.

The previous sampling conducted on May 13, 2020 in support of this exception request for the proposed treatment with GreensandPlus™ catalytic oxidation media produced the following results:

CONTAMINANT	MCL	Raw water	Effluent from Treatment by GreensandPlus ™
Gross alpha	15 pCi/L	21.4 **pCi**/L	1.5 pCi/L
Radium-226/228	5 pCi/L	13.4 pCi/L	1.5 pCi/L
Beta particle	50 pCi/L	22.5 pCi/L	18.3 ± 2.6
Uranium	30 µg/L	0 µg/L	0.2 µg/L

<u>Conditions of Approval for Full-Scale Demonstration Study</u>
We find the proposed full-scale testing protocol (Protocol) generally acceptable. A permanent or longer-term exception may be granted if supported by the data collected during the demonstration study and presented in your demonstration study report (Report). The proposed treatment system must produce finished water in compliance with the total gross alpha and Radium-226/228 MCL in order to be considered effective by the TCEQ. **This exception will expire on April 30, 2023 or upon the completed review of the Report, whichever occurs first**.

In addition to the conditions of approval in this letter, please refer to Enclosure 1, *Requesting an Exception to Provide Innovative/Alternate Treatment,* for additional information regarding the requirements for your Report. The information required in this letter must be submitted to the TCEQ Technical Review and Oversight Team by **January 30, 2023** to allow the TCEQ at least 100 days to review the Report before the exception expires on April 30, 2023.

The following conditions must be followed:

Condition 1:

- **This exception applies only to Treatment Plant 1 - Admiralty Way (TCEQ Facility ID No. TP20183) which is proposed to treat water from TCEQ Well ID G2040069B and TCEQ Well ID G2040069C. This exception will expire April 30, 2023.**
- **Before the expiration date, the PWS must:**
  - **Conduct the 30-day full-scale demonstration study;**
  - **Prepare and submit the Full-Scale Demonstration Report (Report) to the TCEQ Technical Review and Oversight Team (TROT); and**
  - **Allow the TCEQ TROT 100 days to review and respond.**

Condition 2:

- **Water produced using the proposed GreensandPlus™ treatment can ONLY be sent to the distribution system during the 30-day full-scale demonstration study. The use of the treatment system must be immediately discontinued following the study and during the study if any of the following occurs:**
  - **There is any indication that the gross alpha or combined radium 226/228 levels have risen above their respective MCLs.**
  - **The pH of the water is less than 7.0 units.**
- **If the treatment is producing non-compliant water with the constituents listed in §290.105 and §290.106, if water quality testing shows that the water is corrosive and presents a threat to household piping and fixtures, the pH drops below 7.0, TCEQ Technical Review and Oversight Team (TROT) must be notified within 24 hours. Notification can be made with an email containing the PWS ID, contact person and phone number, a description of the issue in the treated water, and any other pertinent information to PTRS@tceq.texas.gov.**
- Water produced from the treatment system after the 30-day full-scale demonstration study may only be sent to the distribution system after the treatment system has received written approval of both:
  - The engineering plans and specifications from the TCEQ Plan Review Team, and
  - An exception for the treatment without an expiration date from the TCEQ TROT based on the demonstration study report.

Condition 3:

- **The TCEQ generally accepts the operating parameters and treatment unit sizing outlined in the submitted Emerald Estates Protocol. These parameters are:**
  - **Both Wells pumping and operating simultaneously as stated in the submittal**
  - **Treatment unit feed flow of 25 gallons per minute (gpm)**
  - **Aeration blower capacity of 283 cubic feet per minute per square foot**
  - **Filter loading rate of 3.5 gpm/ft^2**
  - **Filter backwash flow of 108 gpm (15 gpm/ft^2)**
  - **Prefiltration chlorination to create a free chlorine residual of 1 mg/L**
  - **Post filtration chlorination to create a free chlorine residual of 2 mg/L**
  - **Backwash Recycle flow rate of 2.5 gpm**
  - **Aeration/filtration vessel with a 3-foot diameter and 16-foot height**
    - **Spray nozzles at the top of the vessel and required blowers**
    - **6 feet between spray nozzles and liquid level**

- **A 24-inch layer of GreensandPlus™**
- **A 12-inch layer of anthracite coal with an effective size of 0.85 to 0.95 mm and a uniformity coefficient of less than 1.60.**

- Please note that any limitations on feed water quality, filter loading rates or other parameters specified by the media manufacturer must be followed during the demonstration study.

Condition 4:

- **During the 30 days of operation of the treatment equipment, data must be collected to demonstrate the effectiveness of the installed treatment. During this 30-day full-scale demonstration period, the following data and information must be measured and recorded at the frequencies and locations shown below:**

Parameter	Frequency	Location(s)
Flow rate (in gallons per minute)	Daily	Treatment Unit
Hydrogen Sulfide (field measurement)	Weekly	Finished Water
Disinfectant residual (field measurement)	Daily	Before Filtration (but after pre-chlorination) and Finished Water
pH (field measurement)	Daily	Finished Water
Total time treatment unit is filtering water	Daily	Treatment Unit
Time the filter was in operation between each backwash	When occurs	Treatment Unit
The date and time, the gpm of flow and the duration of each backwash	When occurs	Treatment Unit
Gross Alpha, and Combined Radium 226/228 levels of the raw water, recycled backwash water, treated water, and finished water (lab)*	Weekly immediately before a backwash is initiated and concurrently for the raw and after treatment samples	Raw Water, Immediately After Treatment Unit, the Recycled Backwash Water, and the Finished Water
Iron and Manganese (lab)*	Weekly with the Radionuclides samples	Raw Water, and Immediately After Treatment Unit
Any constituents that may interfere with the radionuclide removal process**	Weekly immediately before a backwash is initiated	Before Filtration, and Finished Water
Primary and Secondary Drinking Water Constituents listed in 30 TAC 290.104(b) and 290.105(b) (lab)*	Once during the study	Finished Water
Total trihalomethanes (TTHM) and haloacetic acids (HAA5)	Weekly	Finished Water
Lead, copper, total alkalinity (as $CaCO_3$), calcium, sodium, sulfate, total dissolved solids (TDS), chloride, iron, manganese (lab)* pH, and temperature (field measurement)	Three times during study (beginning, middle and end)	Finished Water

** Samples for laboratory analysis of the raw and treated water must be analyzed at a National Environmental Laboratory Accreditation Program (NELAP) laboratory accredited by TCEQ.*

*** Please consult with the media manufacturer for the specific constituents of concern.*

Condition 5:

- **The submitted Report must include:**
  - The data required in Condition 4.
  - The dimensions of the treatment unit and the volume of each media installed.
  - The calculated empty bed contract time (EBCT) and hydraulic loading rate (HLR).
  - The parameter(s) that the PWS will use to determine a backwash is needed so that radionuclide levels do not exceed the MCLs.
    - Your submittal stated pressure drop readings would be used to determine when a backwash is needed. The sample results collected during the study and provided in the report must show that the pressure trigger for backwashing provides a backwash frequency that produces a compliant finished water radionuclide level.
    - If the pressure drop backwash trigger is unsuccessful provide a different backwash trigger. Examples may include time, water quality levels, and volume of water treated.
  - The frequency the PWS must monitor and record the backwash trigger.
  - How the PWS will determine they need to regenerate and/or replace the filter media and a projection of how often the PWS will need to regenerate and/or replace the media.
  - A list of all on-site tests conducted, test methods used, test equipment calibration method and frequency, and the proof of calibration for all analytical and flow-measuring equipment.
  - Documentation of NSF Standard 61 certification for all treatment system units, including all media, components, and vessels.
  - Documentation of compliance with NSF Standard 60 certification for all chemicals used.
  - Refer to Enclosure 1 for a general discussion regarding the requirements of all Reports.
  - The manufacturer's specification for each flow meter used during the pilot study and proof of factory or onsite calibration.
  - A list of all on-site tests conducted, test methods used, test equipment calibration methods and frequencies, and the results of each calibration test and any necessary adjustments to the test equipment.

Condition 6:

- **You must evaluate the corrosivity of the finished water and propose a corrosion control strategy, if necessary.** Because the treatment is new, the TCEQ will require additional monitoring after final approval of the treatment to ensure that the system maintains minimal levels of corrosion in the distribution system.

  Using the above water quality parameters shown in the last row of the table in Condition 4, the TCEQ will determine if additional treatment is required to ensure that the product water is suitable and safe for the distribution system and household plumbing. Corrosive indices will be used to calculate corrosivity of the water from the new source. Corrosive or aggressive water could result in aesthetic problems, increased levels of toxic metals, and deterioration of household plumbing and fixtures. If the water appears to be corrosive, the system will be required to conduct a study and submit an engineering report that addresses corrosivity issues or may choose to install corrosion control treatment before use may be granted.

  All changes in treatment require submittal of plans and specifications for approval by TCEQ. You may wish to include a corrosion control strategy with the Demonstration Study Report. If the TCEQ finds that corrosion-control measures are required, you will

need to provide your recommendations (that may include corrosion inhibitors, water chemistry adjustment, or blending with other sources) for your proposed treatment strategy.

Condition 7:

- **The Report must include how the PWS can properly dispose of all regulated wastes that may be generated from the treatment unit. The Report must include the anticipated maximum concentration of radionuclides in any liquid backwash waste, the settled backwash solids, and filter media when it has reached the end of useful life.**

- Though your submittal states that you do not anticipate needing to dispose of the settled backwash solids for many years, the proper method and vendors must be identified and submitted with the Report. The Report must include the permits required and the methods/ vendors the PWS could be used to properly dispose of liquid backwash waste, settled backwash solids (sludge), and spent filter media.

- The waste from the treatment plant may or may not require special handling, care, or regulations. The regulatory guide RG-486, "*Disposal of Exempt Water that Contains Radioactive Material"* has information about disposing of material that contains radioactivity that is exempt from the radioactive material regulations and can be provided by the Radioactive Materials Division using the contacts below. If the backwash effluent, sludge, or spent filter media is not exempt, the PWS must use an alternative disposal method for waste Please refer to 25 TAC §289.259(d), for the Licensing Naturally Occurring Radioactive Material exemption rules. The following TCEQ sections must be contacted to determine which permitting or monitoring requirements for waste apply:

    - The TCEQ Office of Waste, Radioactive Materials Division at Radmat@tceq.texas.gov or at 512-239-6466 about disposal of the radioactive materials.
    - The TCEQ Wastewater Permitting Section (MC 148) can be contacted at (512) 239-2335.
    - The TCEQ Municipal Solids Waste Permits Section (MC 124) can be contacted at (512) 239-6335.

- The system may be required to provide information and safety equipment to meet applicable standards established by OSHA, Texas Hazard Communication Act, or the Texas Health and Safety Code, Title 6, Chapter 502 as specified in 30 TAC 290.42(k).

Condition 8:

- **The Study must be supervised by the engineer responsible for this project who is licensed by the State of Texas. The PWS operators are encouraged to participate in the daily operations of the full-scale study.**

Condition 9:

- **Engineering plans and specifications for all PWS facilities including the proposed treatment equipment must be reviewed and approved by the TCEQ Plan Review Team.**

- Submit sealed and signed engineering plans to the TCEQ Plan Review Team by email at PTRS@tceq.texas.gov. A hardcopy of your submittal must be sent to the address below:

  Plan Review Team, MC-159
  Texas Commission on Environmental Quality
  P.O. Box 13087
  Austin, Texas 78711-3087

  Information regarding the approval process for the submittal of engineering plans and specifications can be found at the following link:

  https://www.tceq.texas.gov/drinkingwater/planrev.html

Condition 10:

- **The Report must be sent to the TCEQ Technical Review and Oversight Team for review and approval to the address listed at the end of this letter** An electronic copy of your Report may be submitted to PTRS@tceq.texas.gov but a hardcopy will still be required.

Condition 11:

- **This exception expires on April 30, 2023.**

RULE REQUIREMENTS:

1. As required by 30 TAC §290.42(j), all media and components, including the pressure vessels, must conform to American National Standards Institute/NSF International (ANSI/NSF) Standard 61 for Drinking Water System Components and the components must have been certified by a testing organization accredited by ANSI.

2. All laboratory analyses must be conducted by a laboratory accredited by the National Environmental Laboratory Accreditation Program (NELAP) and certified for the specific analytes tested. For a list of TCEQ-accredited laboratories see our website at:

   www.tceq.texas.gov/assets/public/compliance/compliance_support/qa/txnelap_lab_list.pdf

3. All treatment flow indicating devices must be installed in accordance with the manufacturer's specifications and the devices must have been calibrated within the last 12 months as required by §290.46(s)(1). This rule also requires well meters to be calibrated at least once every 3 years.

4. Sample taps must be provided on the raw water lines from the wells, on the water leaving the treatment unit, and on the water entering the distribution as required by 30 TAC §290.42(b)(6).

All exceptions are subject to periodic review and may be revoked or amended if warranted as specified in 30 TAC §290.39(l)(2) or evidence is found that granting of an exception results in a degradation of water quality or water supply. Noncompliance with any condition stated in this exception letter may result in enforcement action as specified in 30 TAC §290.39(l)(5). This exception is not intended to waive compliance with any other TCEQ requirement in 30 TAC Chapter 290. This exception cannot be used as a defense in any enforcement action resulting from noncompliance with any other requirement of 30 TAC Chapter 290.

If you have questions concerning this letter, or if we can be of additional assistance, please contact Ms. Erin Guerra, P.E. by email at Erin.Guerra@tceq.texas.gov, by telephone at (512) 239-4787, or by correspondence at the following address:

Technical Review and Oversight Team (MC 159)
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Sincerely,

Erin Guerra, P.E.
Technical Review and Oversight Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

Stephanie Escobar, Team Leader
Technical Review and Oversight Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

SJE/erg/db

Enclosure: Requesting an Exception to Provide Innovative/Alternate Treatment

cc: Ms. Beth Puryear, President, Emerald Estates, 109 Waterwood, Huntsville, TX 77320-9665
Mr. Russell, W Crawley, Operations Manager, Emerald Estates, 12338 FM 356, Trinity, TX 75862-6502

bcc: TCEQ Beaumont Regional Office – R10

REQUESTING AN EXCEPTION TO PROVIDE INNOVATIVE/ALTERNATE TREATMENT

Rules Affected: Title 30 Texas Administrative Code §290.42(g)

Purpose

This document is intended as a guide for public water systems requesting an exception to provide innovative/alternate treatment. Innovative/alternate treatment is defined in Title 30 of the Texas Administrative Code (30 TAC) §290.38(36) as: "*any treatment process that does not have specific design requirements in 30 TAC §290.42(a)-(f) relating to water treatment*". This includes but is not limited to any treatment process for the removal of regulated contaminants, with the exception of reverse osmosis (RO) and nanofiltration (NF) membranes. Reverse osmosis and nanofiltration do not require an exception to provide innovative/alternate treatment. Specific engineering submittal requirements for RO and NF membranes are found in 30 TAC §290.39(e)(6) and (7), and the design requirements for RO and NF membrane systems are outlined in 30 TAC §290.42(b)(9).

Background

30 TAC §290.42(g) states that innovative/alternate treatment processes will be considered on an individual, site-specific basis as a request for an exception in accordance with 30 TAC §290.39(l). A professional engineer (PE) licensed in Texas must provide site specific pilot test data or data collected at similar full-scale operations to the TCEQ demonstrating that the proposed innovative/alternate treatment system will produce water that meets all the drinking quality standards in 30 TAC Chapter 290, Subchapter F. The pilot test data must be representative of the actual operating conditions which can be expected over the course of a year at the public water system (PWS) where the treatment will be installed. In certain cases, proof of a one-year manufacturer's performance warrantee or guarantee assuring that the plant will produce treated water which meets minimum state and federal standards for drinking water quality may be required.

Guidance

The typical exception process to provide innovative/alternate treatment is comprised of three parts:

- approval of a pilot protocol (Protocol);
- pilot testing; and,
- approval of the final pilot study report (Report).

The use of alternate site data in lieu of conducting a site-specific pilot study is discussed at the end of this guidance document. When a PWS decides to install

innovative/alternate treatment, the first step is to hire a professional engineer (PE) licensed in Texas to assess and select an appropriate treatment solution for the system's needs. Once a prospective treatment solution is chosen, a Protocol must be submitted to the TCEQ for approval. The Protocol outlines the operating parameters and sampling schedules for the proposed pilot study that will demonstrate that the treatment solution will meet the system's water quality goals and that the treatment plant will produce water in compliance with all state and federal regulations. The process for submitting the Protocol for approval is the same as any other exception request. For more information on submitting a request for an Exception to 30 TAC Chapter 290, Subchapter D rules, see the TCEQ website at:

www.tceq.texas.gov/drinkingwater/trot/exception

Submission of the Pilot Study Protocol

The Protocol for an exception request to provide innovative/alternate treatment should clearly outline:

- The specific analytes to be treated;
- Why the proposed treatment solution was selected;
- The duration of the pilot study, the pilot study operating parameters (such as flow rate, filter loading rates, pretreatment and post-treatment);
- An analysis of the raw water quality, the proposed finished water quality goals, the proposed pilot and full-scale treatment trains (including pretreatment and posttreatment);
- Onsite parameters that will be monitored and their frequency, raw and treated constituents to be analyzed by an accredited laboratory and how often; and
- Proof that any chemicals or treatment media are certified for potable use.

Other information may be required to fully explain how and why the treatment solution will be implemented.

Below is a list of items that at a minimum should be addressed in your Protocol submission:

- A clear description of the water quality problems and why the proposed treatment solution was selected. This should include the correct PWS name, the 7-digit PWS ID number, TCEQ Source Codes and a locational description of each source to be treated, a locational description of the plant where the treatment will be piloted and installed, and the TCEQ assigned entry point (EP) that the treatment plant serves. Information on PWS inventory and facilities is available on Texas Drinking Water Watch (DWW) at:

  http://dww2.tceq.texas.gov/DWW/

- Raw water quality data (prior to chlorination) for the source(s) to be treated. This analysis shall include all the primary and secondary constituents in 30 TAC §290.104(b) and §290.105(b), as well as lead, copper, alkalinity (as $CaCO_3$), chloride, calcium (as Ca^{+2}), pH, sodium, sulfate and total dissolved solids (TDS).
- A detailed diagram of the pilot and proposed full-scale treatment trains from the raw source to the entry point of distribution. The diagrams must include the

location of sampling/monitoring points, chemical addition, pretreatment filters or screens, post-treatment filters or screens, flow measuring devices, flow control valves, pump(s), adsorption media vessels operated in series, and any other equipment required to operate the treatment process. All media vessels must be labeled with their contents and sample point names should be included on the flow diagram that match the point of collection descriptions used for laboratory results.

- Information on pretreatment and pretreatment goals.
- A sampling matrix for the benchtop and laboratory samples to be collected during the pilot study. This must include sampling of daily disinfection levels and disinfectant residuals in the finished water.
- Information on posttreatment and posttreatment goals.

Conducting the Pilot Study

The TCEQ typically requires 90 days for a pilot study in order to allow time for adjustments and reconfiguration to the pilot system. The TCEQ requires at least 30 days of the pilot test to be conducted under the selected full-scale design flow rate with no major adjustments in operating parameters that may include empty bed contact time (EBCT), hydraulic loading rate (HLR), and chemical addition. The design flow rate may be changed during the pilot study provided that at least 30 days are operated under constant conditions. Failure to demonstrate operation under a continuous filtration rate (or other critical parameters) may result in either the approval to operate at the lowest HLR piloted during the 30-day steady-state period or a requirement to conduct another 30 day steady-state demonstration period.

For drinking water applications, the TCEQ requires the process media to be certified as American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61. This documentation must be submitted with the final pilot study Report to show this requirement was met.

If any chemicals are used in the treatment of the water, the chemicals must conform to the ANSI/NSF Standard 60 and be certified by an organization accredited by ANSI. Provide documentation with the final pilot study Report showing this requirement was met.

Any discharge of wastewater or disposal of other wastes from the pilot study unit must be in accordance with all applicable state and federal statutes and regulations as specified in 30 TAC §290.42(i).

Laboratory Analysis of Pilot Study Samples

All laboratory samples for the pilot study (that show the innovative/alternate treatment solution is effective) must be analyzed by a TCEQ approved laboratory with a current National Environmental Laboratory Accreditation Program (NELAP) certification. The analysis must utilize US Environmental Protection Agency (EPA) or EPA accepted standard methods for drinking water that can measure below the maximum contaminant level (MCL) or secondary standard for each constituent, if applicable. For a list of TCEQ approved labs see the webpage at:

www.tceq.texas.gov/assets/public/compliance/compliance_support/qa/txnelap_lab_list.pdf

Submission of the Pilot Study Report

After the pilot study is completed, a pilot study report must be submitted to the TCEQ by a PE. In addition to the analytical results for the sampling matrix of benchtop and laboratory samples specified in the approved Protocol, the final pilot study Report must also include:

- The PE's signature, seal, and date.
- A restatement of the water quality problems and goals, plus a written discussion of the pilot test and the conclusions made during testing.
- Copies of the raw water quality results, the pilot and full-scale treatment train diagrams, and sampling matrix that were provided in the original Protocol.
- Proof that all wetted components and chemicals used during the pilot and proposed for the full-scale treatment system are ANSI/NSF 60/61 certified.
- Finished water quality data for corrosivity and disinfection byproducts. Laboratory results for total trihalomethanes (TTHM) and haloacetic acids (HAA5) in the finished water must be included with the final Report, as well as laboratory results for alkalinity (as $CaCO_3$), chloride, calcium (as Ca^{+2}), pH, sodium, sulfate and total dissolved solids (TDS).
- The manufacturer's specification for each flow meter used during the pilot study and proof of factory or onsite calibration.
- A list of all on-site tests conducted, test methods used, test equipment calibration methods and frequencies, and the results of each calibration test and any necessary adjustments to the test equipment.

Alternate Site Pilot Study Data

30 TAC §290.42(g) allows the use of alternate site pilot data in lieu of conducting a site-specific pilot study. The data provided from the alternate site must be equivalent to what is required by the TCEQ to approve a pilot study performed in Texas. Additionally, the raw water quality from the alternate site must be comparable or worse than the raw water quality at the proposed system and the full-scale construction of the proposed treatment train must be identical to the full-scale system in operation at the alternate site. The following items are required to be submitted for the TCEQ to consider the approval of alternate site data:

- Complete raw water quality results from the alternate site and the proposed site, including any constituents known to interfere with the given treatment process.
- Written permission from an authorized representative of the alternate site to use the data from their pilot study.
- The manufacturer's specification for each flow meter used during the original pilot study at the alternate site and proof of factory or onsite calibration.

- A list of all on-site tests conducted, test methods used, test equipment calibration methods and frequencies, and the results of each calibration test and any necessary adjustments to the test equipment from the alternate site pilot study.
- Proof that all wetted components and chemicals proposed for the full-scale treatment train are ANSI/NSF 60/61 certified.
- Finished water quality data for corrosivity and disinfection byproducts from the alternate site. Laboratory results for total trihalomethanes (TTHM) and haloacetic acids (HAA5) in the finished water at the alternate site must be included with the request to use alternate site data, as well as laboratory results from the alternate site for alkalinity (as $CaCO_3$), chloride, calcium (as Ca^{+2}), pH, sodium, sulfate and total dissolved solids (TDS).

Submission of Engineering Plans and Specifications

Once a PWS has received approval to provide innovative/alternate treatment, engineering plans and specifications for the proposed treatment train must be submitted to the TCEQ Plan Review Team (PRT). For more information regarding the submission and review of engineering plans and specifications, see the TCEQ website at:

https://www.tceq.texas.gov/drinkingwater/planrev.html

Finalized and Approved by:

Joel Klumpp, Plan and Technical Review Section Manager, 10/15/2019

If no formal expiration date has been established for this external guidance, it will remain in effect until superseded or canceled.

Revision History:

Date	**Action**	**Action by**
9/1/2016	Drafted	Mark Mikol
5/17/2017	Revised	David Williams
3/5/2019	Revised	Yadhira Resendez
09/04/2019	Revised	Yadhira Resendez
10/15/2019	Approved	Joel Klumpp