

# RED RIVER

## GROUNDWATER CONSERVATION DISTRICT

### HYDROGEOLOGICAL REPORT GUIDELINES

*Adopted pursuant to District Rules 3.10(a)(13), 3.10(b) and 3.15(b)*

#### **I. Introduction**

- A. Hydrogeological Reports that meet the criteria in these guidelines must be included with administratively complete applications for any of the following:
  - 1. requests to drill and operate a proposed new well or well system with a proposed aggregate production capacity of 200 gallons per minute or more;
  - 2. requests to modify or increase an existing well or well system with a proposed net aggregate production capacity 200 gallons per minute or more than the aggregate production capacity of the well or well system as of January 1, 2019 or the date of the last Hydrogeological Report submitted with a permit or permit amendment application approved by the Board of Directors, whichever is more recent;; and/or
  - 3. exception to spacing requirements for wells covered by (1) or (2) above.
- B. Purpose of the Hydrogeological Report is to provide the District with hydrogeological information addressing the impacts of the proposed well on existing wells and in relation to the Desired Future Condition (DFC) for the applicable aquifer, as required by Sections 36.113(d) and 36.1132 of the Texas Water Code.
- C. Reports submitted pursuant to District Rules 3.10(a)(13), 3.10(b) and 3.15(b) and these guidelines are required to be sealed by a Professional Geoscientist or Professional Engineer licensed in the State of Texas.
- D. Hydrogeological Reports submitted to the District should follow the chronological order of the criteria set forth in Section II.

#### **II. Required Content of Hydrogeological Reports**

- A. Well construction specifics must include the following:
  - 1. Details on all aspects of well.
  - 2. Schematic well construction diagram.
  - 3. Lithologic description of geology encountered during well drilling.
  - 4. Identify specific location through maps:
    - a. Maps showing location of property relative to county level, location of well relative to property boundaries, and other relevant features
- B. Discussion of hydrogeologic setting must include the following:

1. Identification of the aquifer.
  2. Discussion of surface and subsurface geology at well site.
    - a. Include whether there is any occurrence of any significant groundwater recharge features such as outcrop, surface water bodies, caves, sinkholes, faults or other geologic features.
  3. Include depth interval of proposed water bearing zone and identify target production zone.
  4. Provide anticipated thickness of water bearing zone.
  5. Identify whether the target production zone is anticipated to be confined or unconfined.
  6. Provide estimates of thickness of confining layer at well site location.
  7. Provide specific aquifer parameters at the well site, including transmissivity, hydraulic conductivity and storativity based on the Texas Water Development Board (TWDB) approved Groundwater Availability Model for the aquifer.
    - a. Provide a discussion of the variability of wells in the area, if applicable.
  8. Identify all registered wells within a 1-mile radius of the proposed well using publicly-available District well database.
    - a. In the event the 1-mile radius does not include any registered wells, the radius will be extended to a 2-mile radius in order to address impacts under Section II(D)(3) of these guidelines.
  9. Include identification of streams or springs within 1-mile radius of the proposed well.
- C. Water quality analysis must include the following:
1. Include discussion of known quality in the area based on literature and well reports.
- D. Interference analysis must include the following:
1. Provide quantitative analysis that shows the projected impacts from 1) the proposed production from the well or well system (if applicable) and 2) the well or well system (if applicable) running 100% of the simulation periods.  
**NOTE: Applicant is advised to work with District Staff to settle on proposed production volume prior to performing the analysis.**
    - a. Simulation results must be included showing drawdown at 24 hours, 30 days, and 1 year (contoured with the smallest contour equal to 1-foot water level decline).
      - i. Include discussion of the methodology used for estimating drawdown, including software that was used, the assumptions and/or solution method employed.

- ii. Include illustration and/or maps showing the estimated cone of depression. If there is more than one well in the group, two maps should be included demonstrating:
      - (1) contours for impacts from pumping the proposed well only; and
      - (2) contours for impacts from all wells in the system.
  - 2. For well systems, include a discussion of the amount or degree of interference that each of the system wells may exert on other same system wells.
  - 3. Include a discussion of the estimated impacts on existing registered wells identified under Section II(B)(8) of these guidelines.
- E. Desired Future Condition (DFC) and Modeled Available Groundwater (MAG) Analysis
  - 1. Discussion of the proposed pumping amount in relation to the MAG, as well as the impact of the proposed pumping on the adopted DFC.
- F. Copies of the modeling files must be submitted with the report.

### **III. Post-Drilling Requirements**

- A. Mandatory requirements:
  - 1. Geophysical logs required to be submitted upon completion of the well.
    - a. Geophysical logs must consist of a resistivity or induction curve and a spontaneous potential or gamma ray curve at a minimum.
    - b. Geophysical logs performed in the initial open-borehole are required and will consist of resistivity (self potential and gamma ray at a minimum).
    - c. Wells cased with PVC require induction and gamma ray logs.
    - d. All digital log files to be submitted in LAS format as well as printed.
  - 2. All public water supply sampling completed in accordance with TCEQ/EPA requirements must be submitted to the District.
- B. Must provide if available:
  - a. Digital or tabulated data of water levels measured during drawdown, specific capacity, or pumping test;
  - b. field parameters of specific conductivity, temperature and pH of measurements made during the drawdown or pumping test; and/or
  - c. Any laboratory analysis completed on samples collected from the well after construction and development.

### **IV. Additional Construction Requirements**

A. Measuring tube at least one inch in diameter to be installed from the well head to the bottom most screen interval in all new wells with a capacity to produce 200 gpm or more.

1. The measuring tube shall be a separate PVC pipe on the outside of casing.