

GROUNDWATER AVAILABILITY CERTIFICATION FOR PLATTING

"230.1 - 230.11

Effective July 31, 2008

§230.1. Applicability.

(a) Subdivisions utilizing groundwater as the source of water supply. In the plat application and approval process, municipal and county authorities may require certification that adequate groundwater is available for a proposed subdivision if groundwater under that land is to be the source of water supply. The municipal or county authority is not required to exercise their authority under Texas Local Government Code, §212.0101 or §232.0032. However, if they do exercise their authority, the form and content of this chapter must be used.

(b) Use of this chapter. If required by the municipal or county authority, the plat applicant and the Texas licensed professional engineer or the Texas licensed professional geoscientist shall use this chapter and the attached form to certify that adequate groundwater is available under the land of a subdivision subject to platting under Texas Local Government Code, §212.004 and §232.001. These rules do not replace other state and federal requirements applicable to public drinking water supply systems. These rules do not replace the authority of counties within designated priority groundwater management areas under Texas Water Code, §35.019, or the authority of groundwater conservation districts under Texas Water Code, Chapter 36.

(c) Transmittal of data. If use of this chapter is required by the municipal or county authority, the plat applicant shall:

(1) provide copies of the information, estimates, data, calculations, determinations, statements, and certification required by §230.8 of this title (relating to Obtaining Site-Specific Groundwater Data), §230.9 of this title (relating to Determination of Groundwater Quality), §230.10 of this title (relating to Determination of Groundwater Availability), and §230.11 of this title (relating to Groundwater Availability and Usability Statements and Certification) to the executive administrator of the Texas Water Development Board and to the applicable groundwater conservation district or districts; and

(2) using the attached form, attest that copies of the information, estimates, data, calculations, determinations, statements, and the certification have been provided to the executive administrator of the Texas Water Development Board and the applicable groundwater conservation district or districts. The executive director may make minor changes to this form that do not conflict with the requirements of these rules.

TRANSMITTAL OF DATA

Use of this form: If required by a municipal authority pursuant to Texas Local Government Code, §212.0101, or a county authority pursuant to Texas Local Government Code, §232.0032 the plat applicant shall use this form to attest that information has been provided in accordance with the requirements of

Title 30, TAC, Chapter 230. This form shall be provided to the municipal or county authority, the executive administrator of the Texas Water Development Board, and the applicable groundwater conservation district or districts.

Name of Proposed Subdivision: High Creek Ranch

Property Owner's Name(s): Gary T and Vicki Wilkinson

Address: 3 Gringo Gulch, Placitas, New Mexico, 87043

Phone: (512) 435-1204

Fax: N/A

Plat Applicant's Name: New RC Properties, LLC

Address: 111601 West Hwy 290, Suite A101, Box 352, Austin, Tx, 78737

Phone: (512) 567-1314

Fax: (512) 687-5363

I, New RC Properties, LLC, the Plat Applicant, attest that the following information has been provided in accordance with Title 30, TAC, Chapter 230.

| | | | |
|--|--------------------------------------|--------------------------|---------------------|
| Has the Certification of Groundwater Availability for Platting Form (Figure: 30 TAC §230.3(c)) been provided to the: | | | (Please Circle One) |
| 1. Municipal or County authority? | <input checked="" type="radio"/> Yes | <input type="radio"/> No | |
| 2. Executive administrator of the Texas Water Development Board? | <input checked="" type="radio"/> Yes | <input type="radio"/> No | |
| 3. Applicable Groundwater Conservation District or Districts? | <input checked="" type="radio"/> Yes | <input type="radio"/> No | |
| Name of Groundwater Conservation District or Districts: | | | |
| Middle Trinity GCD | | | |
| | | | |
| Have copies of the information, estimates, data, calculations, determinations, and statements been provided to the: | | | |
| 4. Executive administrator of the Texas Water Development Board? | <input checked="" type="radio"/> Yes | <input type="radio"/> No | |
| 5. Applicable Groundwater Conservation District or Districts? | <input checked="" type="radio"/> Yes | <input type="radio"/> No | |

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| Name of Groundwater Conservation District or Districts: |
| Middle Trinity GCD |
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Note: Mail the required information to the executive administrator of the Texas Water Development Board at the following address:

Executive Administrator
Texas Water Development Board
Groundwater Resources Division
P.O. Box 13231
Austin, Texas 78711-3231

Contact and other information for the Groundwater Conservation Districts within the state may be accessed on the following Internet pages:
http://www.tceq.state.tx.us/permitting/water_supply/groundwater/districts.html
<http://www.twdb.state.tx.us/GwRD/pages/gwrindex.html> <http://www.texasgroundwater.org/index.htm>

Adopted July 9, 2008

Effective July 31, 2008

§230.2. Definitions.

The following words and terms, when used in this chapter, shall have the following meanings, unless the context clearly indicates otherwise. If a word or term used in this chapter is not contained in this section, it shall have the same definition and meaning as used in the practices applicable to hydrology and aquifer testing.

(1) **Applicable groundwater conservation district or districts--**
Any district or authority created under Texas Constitution, Article III, Section 52, or Article XVI, Section 59, that:

(A) has the authority to regulate the spacing of water wells, the production from water wells, or both, and

(B) which includes within its boundary any part of the plat applicant's proposed subdivision.

(2) **Aquifer--**A geologic formation, group of formations, or part of a formation that contains water in its voids or pores and may be used as a source of water supply.

(3) **Aquifer test**--A test involving the withdrawal of measured quantities of water from or addition of water to a well and the measurement of resulting changes in water level in the aquifer both during and after the period of discharge or addition for the purpose of determining the characteristics of the aquifer. For the purposes of this chapter, bail and slug tests are not considered to be aquifer tests.

(4) **Certification**--A written statement of best professional judgement or opinion as attested to on the Certification of Groundwater Availability for Platting Form contained under §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting).

(5) **Drinking water standards**--As defined in commission rules covering drinking water standards contained in Chapter 290, Subchapter F of this title (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems).

(6) **Executive administrator**--The executive administrator of the Texas Water Development Board.

(7) **Full build out**--The final expected number of residences, businesses, or other dwellings in the proposed subdivision.

(8) **Licensed professional engineer**--An engineer who maintains a current license through the Texas Board of Professional Engineers in accordance with its requirements for professional practice.

(9) **Licensed professional geoscientist**--A geoscientist who maintains a current license through the Texas Board of Professional Geoscientists in accordance with its requirements for professional practice.

(10) **Plat applicant**--The owner or the authorized representative or agent seeking approval of a proposed subdivision plat application pursuant to municipal or county authority.

(11) **Requirements applicable to public drinking water supply systems**--The requirements contained in commission rules covering public drinking water supply systems in Chapter 290, Subchapter D of this title (relating to Rules and Regulations for Public Water Systems).

§230.3. Certification of Groundwater Availability for Platting.

(a) Certification. The certification required by this chapter must be prepared by a Texas licensed professional engineer or a Texas licensed professional geoscientist.

(b) Submission of information. The plat applicant shall provide to the municipal or county authority, the executive administrator of the Texas Water Development Board, and the applicable groundwater conservation district or districts the certification of adequacy of groundwater under the subdivision required by this chapter.

(c) Form required. This chapter and the following form shall be used and completed if plat applicants are required by the municipal or county authority to certify that adequate groundwater is available under the land to be subdivided. The executive director may make minor changes to this form that do not conflict with the requirements of these rules.

CERTIFICATION OF GROUNDWATER AVAILABILITY FOR PLATTING FORM

Use of this form: If required by a municipal authority pursuant to Texas Local Government Code, §212.0101, or a county authority pursuant to §232.0032, Texas Local Government Code, the plat applicant and the Texas licensed professional engineer or Texas licensed professional geoscientist shall use this form based upon the requirements of Title 30, TAC, Chapter 230 to certify that adequate groundwater is available under the land to be subdivided (if the source of water for the subdivision is groundwater under the subdivision) for any subdivision subject to platting under Texas Local Government Code, §212.004 and §232.001. The form and Chapter 230 do not replace state requirements applicable to public drinking water supply systems or the authority of counties or groundwater conservation districts under either Texas Water Code, §35.019 or Chapter 36.

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| Administrative Information (30 TAC §230.4) |
| 1. Name of Proposed Subdivision: High Creek Ranch |
| 2. Any Previous Name Which Identifies the Tract of Land: N/A |
| 3. Property Owner's Name(s): Gary T and Vicki Wilkinson |
| Address: 3 Gringo Gulch, Placitas, New Mexico, 87043 |
| Phone: (512) 435-1204 |
| Fax: N/A |

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| 4. Plat Applicant's Name: New RC Properties, LLC |
| Address: 111601 West Hwy 290, Suite A101, Box 352, Austin, Tx, 78737 |
| Phone: (512) 567-1314 |
| Fax: (512) 687-5363 |
| 5. Licensed Professional Engineer or Geoscientist: |
| Name: Eric Seeger |
| Address: 1106 South Mays St. Round Rock Texas 78664 |
| Phone: (512) 244-2172 |
| Fax: N/A |
| Certificate Number: 119222 |
| 6. Location and Property Description of Proposed Subdivision: 1019 acres at 3885 Harmon Rd., Copperas Cove, Texas, 78522 |
| 7. Tax Assessor Parcel Number(s). |
| Book: Prop ID. 153025/108973 |
| Map: K5 |
| Parcel: 153025 # 108973 |

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| Proposed Subdivision Information (30 TAC §230.5) |
| 8. Purpose of Proposed Subdivision (single family/multi-family residential, non-residential, commercial): single family residential |
| 9. Size of Proposed Subdivision (acres): 1019 acres |
| 10. Number of Proposed Lots: 185 lots |
| 11. Average Size of Proposed Lots (acres): 5 acres |
| 12. Anticipated Method of Water Distribution. |

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| Expansion of Existing Public Water Supply System? | Yes | <input type="radio"/> No |
| New (Proposed) Public Water Supply System? | Yes | <input type="radio"/> No |
| Individual Water Wells to Serve Individual Lots? | <input checked="" type="radio"/> Yes | No |
| Combination of Methods? | Yes | <input type="radio"/> No |
| Description (if needed): | | |
| 13. Additional Information (if required by the municipal or county authority): | | |
| Note: If public water supply system is anticipated, written application for service to existing water providers within a 1/2-mile radius should be attached to this form (30 TAC §230.5(f) of this title). | | |

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| Projected Water Demand Estimate (30 TAC §230.6) |
| 14. Residential Water Demand Estimate at Full Build Out (includes both single family and multi-family residential). |
| Number of Proposed Housing Units (single and multi-family): 185 houses |
| Average Number of Persons per Housing Unit: 3 to 4 people |
| Gallons of Water Required per Person per Day: 150 gallons |
| Water Demand per Housing Unit per Year (acre feet/year): 0.5 to 0.67 acre-feet |
| Total Expected Residential Water Demand per Year (acre feet/year): 93 to 124 acre-feet |
| 15. Non-residential Water Demand Estimate at Full Build Out. |
| Type(s) of Non-residential Water Uses: There are no planned common or non-residential areas. |
| Water Demand per Type per Year (acre feet/year): N/A |
| 16. Total Water Demand Estimate at Full Build Out (acre feet/year): 93 to 124 acre-feet |

17. Sources of Information Used for Demand Estimates: 2014-2018 US Census and 2019 Water Use of Texas Water Utilities

General Groundwater Resource Information (30 TAC §230.7)

18. Identify and describe, using Texas Water Development Board names, the aquifer(s) which underlies the proposed subdivision:

See Attachment

Note: Users may refer to the most recent State Water Plan to obtain general information pertaining to the state's aquifers. The State Water Plan is available on the Texas Water Development Board's Internet website at: www.twdb.state.tx.us

Obtaining Site-Specific Groundwater Data (30 TAC §230.8)

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| 19. Have all known existing, abandoned, and inoperative wells within the proposed subdivision been located, identified, and shown on the plat as required under §230.8(b) of this title? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
| 20. Were the geologic and groundwater resource factors identified under §230.7(b) of this title considered in planning and designing the aquifer test required under §230.8(c) of this title? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
| 21. Have test and observation wells been located, drilled, logged, completed, developed, and shown on the plat as required by §230.8(c)(1) - (4) of this title? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
| 22. Have all reasonable precautions been taken to ensure that contaminants do not reach the subsurface environment and that undesirable groundwater has been confined to the zone(s) of origin (§230.8(c)(5) of this title)? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
| 23. Has an aquifer test been conducted which meets the requirements of §230.8(c)(1) and (6) of this title? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
| 24. Were existing wells or previous aquifer test data used? | <input type="radio"/> Yes | <input checked="" type="radio"/> No |
| 25. If yes, did they meet the requirements of §230.8(c)(7) of this title? | <input type="radio"/> Yes | <input checked="" type="radio"/> No |

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| 26. Were additional observation wells or aquifer testing utilized? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
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Note: If expansion of an existing public water supply system or a new public water supply system is the anticipated method of water distribution for the proposed subdivision, site-specific groundwater data shall be developed under the requirements of 30 TAC, Chapter 290, Subchapter D of this title (relating to Rules and Regulations for Public Water Systems) and the applicable information and correspondence developed in meeting those requirements shall be attached to this form pursuant to §230.8(a) of this title.

| Determination of Groundwater Quality (30 TAC §230.9) | | |
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| 27. Have water quality samples been collected as required by §230.9 of this title? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |
| 28. Has a water quality analysis been performed which meets the requirements of §230.9 of this title? | <input checked="" type="radio"/> Yes | <input type="radio"/> No |

| Determination of Groundwater Availability (30 TAC §230.10) | |
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| 29. Have the aquifer parameters required by §230.10(c) of this title been determined? | <input checked="" type="radio"/> Yes <input type="radio"/> No |
| 30. If so, provide the aquifer parameters as determined. | |
| Rate of yield and drawdown: | Well 1: 17 gpm and 375 feet; Well 2: 11 gpm and 380 feet |
| Specific capacity: | Well 1: 0.13 and Well 2: 0.09 gpm/ft |
| Efficiency of the pumped well: | Well 1: > 90 percent Well 2: > 90 percent |
| Transmissivity: | 170 to 1,000 gpd/ft |
| Coefficient of storage: | 2.9x10 ⁻⁴ to 7.7x10 ⁻⁵ |
| Hydraulic conductivity: | 4 to 17 gpd/ft ² |

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| Were any recharge or barrier boundaries detected? | Yes | <input checked="" type="radio"/> No |
| If yes, please describe: | N/A | |
| Thickness of aquifer(s): | 40 to 60 feet | |
| 31. Have time-drawdown determinations been calculated as required under §230.10(d)(1) of this title? | <input checked="" type="radio"/> Yes | No |
| 32. Have distance-drawdown determinations been calculated as required under §230.10(d)(2) of this title? | <input checked="" type="radio"/> Yes | No |
| 33. Have well interference determinations been made as required under §230.10(d)(3) of this title? | <input checked="" type="radio"/> Yes | No |
| 34. Has the anticipated method of water delivery, the annual groundwater demand estimates at full build out, and geologic and groundwater information been taken into account in making these determinations? | <input checked="" type="radio"/> Yes | No |
| 35. Has the water quality analysis required under §230.9 of this title been compared to primary and secondary public drinking water standards as required under §230.10(e) of this title? | Yes | <input checked="" type="radio"/> No * |
| Does the concentration of any analyzed constituent exceed the standards? | Yes | <input checked="" type="radio"/> No * |
| If yes, please list the constituent(s) and concentration measure(s) which exceed standards: *Samples were collected as indicated in questions 27 and 28; however, the results of the samples have not been received. See Attachment for more detail. | | |

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| Groundwater Availability and Usability Statements (30 TAC §230.11(a) and (b)) | |
| 36. Drawdown of the aquifer at the pumped well(s) is estimated to be _35 to 70_ feet over a 10-year period and _50 to 85_ feet over a 30-year period. | |
| 37. Drawdown of the aquifer at the property boundary is estimated to be _35 to 60_ feet over a 10year period and _50 to 75_ feet over a 30-year period. | |
| 38. The distance from the pumped well(s) to the outer edges of the cone(s)-of-depression is estimated to be _40,000 to 70,000_ feet over a 10-year period and _45,000 to 75,000_ feet over a 30-year period. | |
| 39. The recommended minimum spacing limit between wells is _300 to 500_ feet with a recommended well yield of _5 to 15_ gallons per minute per well. See Attachment 2 for comment about spacing. | |

40. Available groundwater is not (circle one) of sufficient quality to meet the intended use of the platted subdivision.

41. The groundwater availability determination does not consider the following conditions (identify any assumptions or uncertainties that are inherent in the groundwater availability determination):
See Attachment

Certification of Groundwater Availability (30 TAC §230.11(c))

Must be signed by a Texas Licensed Professional Engineer or a Texas Licensed Professional Geoscientist.

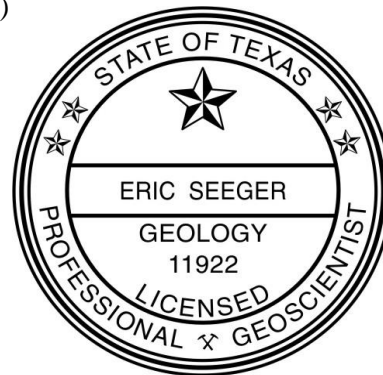
42. I, Eric Seeger, Texas Licensed Professional Engineer or Texas Licensed Professional Geoscientist (circle which applies), certificate number 11922, based on best professional judgment, current groundwater conditions, and the information developed and presented in this form, certify that adequate groundwater is available from the underlying aquifer(s) to supply the anticipated use of the proposed subdivision.

Date: 8/25/2020

(affix seal)



The seal appearing on this document was authorized by Eric Seeger, P.G. on August 25, 2020.



Adopted July 9, 2008

Effective July 31, 2008

'230.4. Administrative Information.

At a minimum, the following general administrative information as specified in '230.3(c) of this title (relating to Certification of Groundwater Availability for Platting), shall be provided for a proposed subdivision for which groundwater under the land will be the source of water supply:

- (1) the name of the proposed subdivision;
- (2) any previous or other name(s) which identifies the tract of land;

(3) the name, address, phone number, and facsimile number of the property owner or owners;

(4) the name, address, phone number, and facsimile number of the person submitting the plat application;

(5) the name, address, phone number, facsimile number, and registration number of the licensed professional engineer or the licensed professional geoscientist preparing the certification as required in this chapter;

(6) the location and property description of the proposed subdivision; and

(7) the tax assessor parcel number(s) by book, map, and parcel.

Adopted January 23, 2003

Effective February 13, 2003

'230.5. Proposed Subdivision Information.

At a minimum, the following information pertaining to the proposed subdivision shall be provided as specified in '230.3(c) of this title (relating to Certification of Groundwater Availability for Platting):

(1) the purpose of the proposed subdivision, for example, single family residential, multi-family residential, non-residential, commercial, or industrial;

(2) the size of the proposed subdivision in acres;

(3) the number of proposed lots within the proposed subdivision;

(4) the average size (in acres) of the proposed lots in the proposed subdivision;

(5) the anticipated method of water distribution to the proposed lots in the proposed subdivision including, but not limited to:

(A) an expansion of an existing public water supply system to serve the proposed subdivision (if groundwater under the subdivision is to be the source of water supply);

(B) a new public water supply system for the proposed subdivision;

(C) individual water wells to serve individual lots; or

(D) a combination of methods;

(6) if the anticipated method of water distribution for the proposed subdivision is from an expansion of an existing public water supply system or from a proposed public water supply system, evidence required under '290.39(c)(1) of this title (relating to Rules and Regulations for Public Water Systems) which shall be provided demonstrating that written application for service was made to the existing water providers within a 2-mile radius of the subdivision; and

(7) any additional information required by the municipal or county authority as part of the plat application.

Adopted June 14, 2000

Effective July 9, 2000

'230.6. Projected Water Demand Estimate.

(a) Residential water demand estimate. Residential water demand estimates at full build out shall be provided as specified in '230.3(c) of this title (relating to Certification of Groundwater Availability for Platting). Residential demand estimates shall, at a minimum, be based on the current demand of any existing residential well including those identified under '230.8(b) of this title (relating to Obtaining SiteSpecific Groundwater Data), or '290.41(c) of this title (relating to Rules and Regulations for Public Water Systems), and:

- (1) the number of proposed housing units at full build out;
- (2) the average number of persons per housing unit;
- (3) the gallons of water required per person per day;
- (4) the water demand per housing unit per year (acre feet per year);

and

- (5) the total expected residential water demand per year for the proposed subdivision (acre feet per year).

(b) Non-residential water demand estimate. Water demand estimates at full build out shall be provided for all non-residential uses as specified in '230.3(c) of this title. Non-residential uses shall be specified by type of use and groundwater demand per year (acre feet per year) for each type of use. The estimate shall also include the existing non-residential demand of any well including those identified under '230.8(b) of this title or '290.41(c) of this title.

(c) Total annual water demand estimate. An estimate of the total expected annual groundwater demand, including residential and non-residential estimates at full build out (acre feet per year), shall be provided as specified in '230.3(c) of this title.

(d) Submission of information. The sources of information used and calculations performed to determine the groundwater demand estimates as required by this section shall be made available to the municipal or county authority if requested. The plat applicant shall provide any additional groundwater demand information required by the municipal or county authority as part of the plat application.

Adopted June 14, 2000

Effective July 9, 2000

'230.7. General Groundwater Resource Information.

(a) Aquifer identification. Using Texas Water Development Board aquifer names, the aquifer(s) underlying the proposed subdivision which is planned to be used as the source of water for the subdivision shall be identified and generally described as specified in '230.3(c) of this title (relating to Certification of Groundwater Availability for Platting).

(b) Geologic and groundwater information. To meet the requirements of this chapter, the following geologic and groundwater information shall be considered in planning and designing the aquifer test under '230.8(c) of this title (relating to Obtaining Site-Specific Groundwater Data):

- (1) the stratigraphy of the geologic formations underlying the subdivision;
- (2) the lithology of the geologic strata;
- (3) the geologic structure;
- (4) the characteristics of the aquifer(s) and their hydraulic relationships;
- (5) the recharge to the aquifer(s), and movement and discharge of groundwater from the aquifer(s); and
- (6) the ambient quality of water in the aquifer(s).

Adopted June 14, 2000

Effective July 9, 2000

'230.8. Obtaining Site-Specific Groundwater Data.

(a) Applicability of section. This section is applicable only if the proposed method of water distribution for the proposed subdivision is individual water wells on individual lots. If expansion of an existing public water supply system or installation of a new public water supply system is the proposed method of water distribution for the proposed subdivision, site-specific groundwater data shall be developed under the requirements of Chapter 290, Subchapter D of this title (relating to Rules and Regulations for Public Water Systems) and the information developed in meeting these requirements shall be attached to the form required under '230.3 of this title (relating to Certification of Groundwater Availability for Platting).

(b) Location of existing wells. All known existing, abandoned, and inoperative wells within the proposed subdivision shall be identified, located, and mapped by on-site surveys. Existing well locations shall be illustrated on the plat required by the municipal or county authority.

(c) Aquifer testing. Utilizing the information considered under '230.7(b) of this title (relating to General Groundwater Resource Information), an aquifer test shall be conducted to characterize the aquifer(s) underlying the proposed subdivision. The aquifer test must provide sufficient information to allow evaluation of each aquifer that is being considered as a source of residential and non-residential water supply for the proposed subdivision. Appropriate aquifer testing shall be based on typical well completions. An aquifer test conducted under this section utilizing established methods shall be reported as specified in '230.3(c) of this title and shall include, but not be limited to, the following items.

(1) Test well and observation well(s). At a minimum, one test well (i.e., pumping well) and one observation well, shall be required to conduct an adequate aquifer test under this section. Additional observation wells shall be used for the aquifer test if it is practical or necessary to confirm the results of the test. The observation well(s) shall be completed in the same aquifer or aquifer production zone as the test well. The locations of the test and observation well(s) shall be shown on the plat required by the municipal or county authority.

(2) Location of wells. The test and observation well(s) must be placed within the proposed subdivision and shall be located by latitude and longitude. The observation well(s) shall be located at a radial distance such that the time-drawdown data collected during the planned pumping period fall on a type curve of unique curvature. In general, observation wells in unconfined aquifers should be placed no farther than 300 feet from the test well, and no farther than 700 feet in thick, confined aquifers. The observation well should also be placed no closer to the test well than two times the thickness of the aquifer's production zone. The optimal location for the observation well(s) can be determined by best professional judgement after completion and evaluation of the test well as provided in paragraph (4) of this subsection.

(3) Lithologic and geophysical logs. The test and observation wells shall be lithologically and geophysically logged to map and characterize the geologic formation(s) and the aquifer(s) in which the aquifer test(s) is to be performed.

(A) A lithologic log shall be prepared showing the depth of the strata, their thickness and lithology (including size, range, and shape of constituent particles as well as smoothness), occurrence of water bearing strata, and any other special notes that are relevant to the drilling process and to the understanding of subsurface conditions.

(B) Geophysical logs shall be prepared which provide qualitative information on

aquifer characteristics and groundwater quality. At a minimum, the geophysical logs shall include an electrical log with shallow and deep-investigative curves (e.g., 16-inch short normal/64-inch long normal resistivity curves or induction log) with a spontaneous potential curve.

(C) The municipal or county authority may, on a case-by-case basis, waive the requirement of geophysical logs as required under this section if it can be adequately demonstrated that the logs are not necessary to characterize the aquifer(s) for testing purposes.

(4) Well development and performance. The test and observation well(s) shall be developed prior to conducting the aquifer test to repair damage done to the aquifer(s) during the drilling operation. Development shall insure that the hydraulic properties of the aquifer(s) are restored as much as practical to their natural state.

(A) Well development procedures applied to the well(s) may vary depending on the drilling method used and the extent of the damage done to the aquifer(s).

(B) During well development, the test well shall be pumped for several hours to determine the specific capacity of the well, the maximum anticipated drawdown, the volume of water produced at certain pump speeds and drawdown, and to determine if the observation well(s) are suitably located to provide useful data.

(C) Water pumped out of the well during well development shall not be allowed to influence initial well performance results.

(D) Aquifer testing required by this section shall be performed before any acidization or other flow-capacity enhancement procedures are applied to the test well.

(5) Protection of groundwater. All reasonably necessary precautions shall be taken during construction of test and observation wells to ensure that surface contaminants do not reach the subsurface environment and that undesirable groundwater (water that is injurious to human health and the environment or water that can cause pollution to land or other waters) if encountered, is sealed off and confined to the zone(s) of origin.

(6) Duration of aquifer test and recovery. The duration of the aquifer test depends entirely on local and geologic conditions. However, the test shall be of sufficient duration to observe a straight-line trend on a plot of water level versus the logarithm of time pumped. Water pumped during the test shall not be allowed to influence the test results. Aquifer testing shall not commence until water levels (after well development) have completely recovered to their pre-development level or at least to 90% of that level.

(A) At a minimum, a 24-hour uniform rate aquifer test shall be conducted. Testing shall continue long enough to observe a straight-line trend on a plot of water level versus the logarithm of time pumped. If necessary, the duration of the test should be extended beyond the 24-hour minimum limit until the straight-line trend is observed.

(i) If it is impractical to continue the test until a straight-line trend of water level versus the logarithm of time pumped is observed within the 24-hour limit, the test shall continue at least until a consistent pumping-level trend is observed. In such instances, failure to observe the straight-line trend shall be recorded.

(ii) If the pumping rates remain constant for a period of at least four hours and a straight-line trend is observed on a plot of water level versus the logarithm of time pumped before the 24-hour limit has been reached, the pumping portion of the test may be terminated.

(iii) The frequency of water level measurements during the aquifer test shall be such that adequate definition of the time-drawdown curve is made available. As much information as possible shall be obtained in the first ten minutes of testing (i.e., pumping).

(B) Water-level recovery data shall be obtained to verify the accuracy of the data obtained during the pumping portion of the test. Recovery measurements shall be initiated immediately at the conclusion of the pumping portion of the aquifer test and shall be recorded with the same frequency as those taken during the pumping portion of the aquifer test. Time-recovery measurements shall continue until the water levels have recovered to pre-pumping levels or at least to 90% of that level. If such recovery is not possible, time-recovery measurements should continue until a consistent trend of recovery is observed.

(7) Use of existing wells and aquifer test data.

(A) An existing well may be utilized as an observation well under this section if sufficient information is available for that well to demonstrate that it meets the requirements of this section.

(B) The municipal or county authority may accept the results of a previous aquifer test in lieu of a new test if:

(i) the previous test was performed on a well located within a 1/4-mile radius of the subdivision;

(ii) the previous test fully meets all the requirements of this section;

(iii) the previous test was conducted on an aquifer which is being considered as a source of water supply for the proposed subdivision; and

(iv) aquifer conditions (e.g., water levels, gradients, etc.) during the previous test were approximately the same as they are presently.

(8) Need for additional aquifer testing and observation wells. Best professional judgement shall be used to determine if additional observation wells or aquifer tests are needed to adequately demonstrate groundwater availability. The Theis and Cooper-Jacob nonequilibrium equations, and acceptable modifications thereof, are based on well documented assumptions. To determine if additional information is needed, best professional judgement shall be used to consider these assumptions, the site-specific information derived from the aquifer test required by this section, the size of the proposed subdivision, and the proposed method of water delivery.

(d) Submission of information. The information, data, and calculations required by this section shall be made available to the municipal or county authority, if requested, to document the requirements of this section as part of the plat application.

Adopted June 14, 2000

Effective July 9, 2000

§230.9. Determination of Groundwater Quality.

(a) Water quality analysis. Water samples shall be collected near the end of the aquifer test for chemical analysis. Samples shall be collected from each aquifer being considered for water supply for the proposed subdivision and reported as specified in §230.3(c) of this title (relating to Certification of Groundwater Availability for Platting).

(1) For proposed subdivisions where the anticipated method of water delivery is from an expansion of an existing public water supply system or a new public water supply system, the samples shall be submitted for bacterial and chemical analysis as required by Chapter 290, Subchapter F of this title (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements For Public Water Systems).

(2) For proposed subdivisions where the anticipated method of water delivery is from individual water supply wells on individual lots, samples shall be analyzed for the following:

- (A) chloride;
- (B) conductivity;
- (C) fluoride;
- (D) iron;

- (E) nitrate (as nitrogen);
- (F) manganese;
- (G) pH;
- (H) sulfate;
- (I) total hardness;
- (J) total dissolved solids; and
- (K) presence/absence of total coliform bacteria.

(3) Conductivity and pH values may be measured in the field, and the other constituents shall be analyzed in a laboratory accredited by the agency according to Chapter 25, Subchapters A and B of this title (relating to General Provisions and Environmental Testing Laboratory Accreditation, respectively) or certified by the agency according to Chapter 25, Subchapters A and C of this title (relating to General Provisions and Environmental Testing Laboratory Certification, respectively).

(b) Submission of information. The information, data, and calculations required by this section shall be made available to the municipal or county authority, if requested, to document the requirements of this section as part of the plat application.

Adopted July 9, 2008

Effective July 31, 2008

'230.10. Determination of Groundwater Availability.

(a) Time frame for determination of groundwater availability. At a minimum, both a short- and long-term determination of groundwater availability shall be made, each considering the estimated total water demand at full build out of the proposed subdivision. Groundwater availability shall be determined for ten years and 30 years and for any other time frame(s) required by the municipal or county authority.

(b) Other considerations in groundwater availability determination. Groundwater availability determinations shall take into account the anticipated method of water delivery as identified under '230.5 of this title (relating to Proposed Subdivision Information) and will be compared to annual demand estimates at full build out as determined under '230.6 of this title (relating to Projected Water Demand Estimate).

(c) Determination of aquifer parameters. The parameters of the aquifer(s) being considered to supply water to the proposed subdivision shall be determined utilizing the information considered

under '230.7 of this title (relating to General Groundwater Resource Information) and data obtained during the aquifer test required under '230.8 of this title (relating to Obtaining Site-Specific Groundwater Data) for individual water wells or under Chapter 290, Subchapter D of this title (relating to Rules and Regulations for Public Water Systems) and reported as specified in '230.3(c) of this title (relating to Certification of Groundwater Availability for Platting). The time-drawdown and time-recovery data obtained during the aquifer test shall be used to determine aquifer parameters utilizing the nonequilibrium equations developed by Theis or Cooper-Jacob, or acceptable modifications thereof. The following aquifer parameters shall be determined:

- (1) rate of yield and drawdown;
- (2) specific capacity;
- (3) efficiency of the pumped (test) well;
- (4) transmissivity;
- (5) coefficient of storage;
- (6) hydraulic conductivity;
- (7) recharge or barrier boundaries, if any are present; and
- (8) thickness of the aquifer(s).

(d) Determination of groundwater availability. Using the information and data identified and determined in subsections (b) and (c) of this section, the following calculations shall be made.

(1) Time-drawdown. The amount of drawdown at the pumped well(s) and at the boundaries of the proposed subdivision shall be determined for the time frames identified under subsection (a) of this section.

(2) Distance-drawdown. The distance(s) from the pumped well(s) to the outer edges of the cone(s)-of-depression shall be determined for the time frames identified under subsection (a) of this section.

(3) Well interference. For multiple wells in a proposed subdivision, calculations shall be made to:

(A) determine how pumpage from multiple wells will affect drawdown in individual wells for the time frames identified under subsection (a) of this section; and

(B) determine a recommended minimum spacing limit between individual wells

and well yields from the wells that will allow for the continued use of the wells for the time frames identified under subsection (a) of this section.

(e) Determination of groundwater quality. The water quality analysis required under '230.9 of this title (relating to Determination of Groundwater Quality) shall be compared to primary and secondary public drinking water standards and the findings documented as specified in '230.3(c) of this title.

(f) Submission of information. The information, data, and calculations required by this section shall be made available to the municipal or county authority, if required, to document the requirements of this section as part of the plat application.

Adopted June 14, 2000

Effective July 9, 2000

'230.11. Groundwater Availability and Usability Statements and Certification.

(a) Groundwater availability and usability statements. Based on the information developed under '230.10 of this title (relating to Determination of Groundwater Availability), the following information shall be provided as specified in '230.3(c) of this title (relating to Certification of Groundwater Availability for Platting):

(1) the estimated drawdown of the aquifer at the pumped well(s) over a ten-year period and over a 30-year period;

(2) the estimated drawdown of the aquifer at the subdivision boundary over a ten-year period and over a 30-year period;

(3) the estimated distance from the pumped well(s) to the outer edges of the cone(s)-of-depression over a ten-year period and over a 30-year period;

(4) the recommended minimum spacing limit between wells and the recommended well yield; and

(5) the sufficiency of available groundwater quality to meet the intended use of the platted subdivision.

(b) Groundwater availability determination conditions. The assumptions and uncertainties that are inherent in the determination of groundwater availability should be clearly identified as specified in '230.3(c) of this title. These conditions must be identified to adequately define the bases for the availability and usability statements. These bases may include, but are not limited to, uncontrollable and unknown factors such as:

(1) future pumpage from the aquifer or from interconnected aquifers from area wells

outside of the subdivision or any other factor that cannot be predicted that will affect the storage of water in the aquifer;

(2) long-term impacts to the aquifer based on climatic variations; and

(3) future impacts to usable groundwater due to unforeseen or unpredictable contamination.

(c) Certification. Based on best professional judgement, current groundwater conditions, and the information developed and presented in the form specified by '230.3(c) of this title, the licensed professional engineer or licensed professional geoscientist certifies by signature, seal, and date that adequate groundwater is available from the underlying aquifer(s) to supply the estimated demand of the proposed subdivision.

Adopted January 23, 2003

Effective February 13, 2003

Attachment –
Expanded Explanation for §230.7, §230.10,
§230.11(a) and (b), Figures, Well Diagrams, and Charts

30 TAC §230.7 General Groundwater Resources Information

The proposed subdivision lies atop formations of Cretaceous-age which are composed of terrigenous sediment and marine carbonates. The Walnut, Paluxy, and Glen Rose Formations can be found at the surface within the boundary of the proposed subdivision (See Figure 1). The Paluxy and Glen Rose Limestone along with the Travis Peak Formation comprise the Trinity aquifer, which is the target aquifer for groundwater wells within the proposed subdivision. The Travis Peak Formation can be subdivided into the (from top to bottom) Hensell Sand, Pearsall, Cow Creek Limestone, Hammett Shale, Hosston and Sligo Members. Often the Trinity aquifer is divided into three (3) hydrologic units; Upper, Middle, and Lower Trinity aquifer. The Upper Trinity aquifer is composed of the Paluxy Formation and upper member of the Glen Rose Limestone. The Middle Trinity aquifer is composed of the lower member of the Glen Rose Limestone, and the Hensell Sand, Pearsall, Cow Creek Limestone, and Hammett Shale Members of the Travis Peak Formation. The Lower Trinity aquifer is composed of the Sligo and Hosston Members. Table 1 provides the names and description of the important geologic and hydrologic units in the proposed subdivision.

The primary source of groundwater recharge into a formation in the area is infiltration of precipitation in the outcrop. Additionally, groundwater can move from formation to another through leakage across formation boundaries. Groundwater moves downgradient which is usually downdip or natural surface drainage systems (e.g. lakes, rivers, or springs). Groundwater naturally discharges when the land surface intersects the water table, which is commonly found at springs, along streams and rivers, lakes, and marshes. Water quality for the Middle and Lower Trinity aquifers is generally good for human consumption. However, the quality of the water can change across short distances due to the specific mineral composition of the formation where individual wells are drilled. Individual wells should be sampled and tested in a laboratory to determine if the groundwater contains any constituents at concentrations known to be harmful to humans.

The two (2) test wells and two (2) observation wells drilled and tested as part of this groundwater availability certification for platting were completed to produce water from the Middle Trinity aquifer. Across the proposed subdivision, the Middle Trinity aquifer is the shallowest aquifer that would have adequate availability of groundwater and available drawdown for domestic well purposes; however, the Lower Trinity aquifer is known to produce moderate to large volumes of water regionally. The Lower Trinity aquifer is deeper and therefore the cost to complete a well is higher, but it would likely provide greater available drawdown (and potentially greater production) and be less impacted during drought conditions. Based on the work conducted for the fulfillment of this certification and research of the local geology, the Middle Trinity aquifer is adequate to provide groundwater for domestic purposes across the proposed subdivision.

Table 1. Description of Geologic and Hydrologic Units.

| Group | Stratigraphic Unit | | Hydrologic Unit | Approximate Maximum Thickness (Feet) | | Character Of Rocks | Water-Bearing Properties | | |
|----------------|-------------------------|---|-----------------------------------|--------------------------------------|----------------|---|--|---|---|
| Fredericksburg | Kiamichi Formation | | Edwards and Associated Limestones | 50 | | Hard, fossiliferous limestones, shale, chert, & dolomite. Some calcareous clay. | Yields small to large amounts of water. | | |
| | Edwards Formation | | | 175 | | | | | |
| | Comanche Peak Formation | | | 150 | | | | | |
| | Walnut Formation | | | 200 | | | | | |
| Trinity | Antlers Formation | Paluxy Formation | Upper Trinity | 225 | 200 | Fine-grained quartz sand in part indrated by calcium carbonate cement. Locally contains thin beds of limestone and marl. | Yields very small to moderate quantities of fresh to slightly saline water. | | |
| | | | | | 1,500 | Alternating beds of limestone, dolomite, shale, & marl with some anhydrite & gypsum. Massive fossiliferous limestone & dolomite in the basal part of grading upward into thin | | | |
| | | Travis Peak Formation | Hensell Sand Member | | Middle Trinity | 1,800 | Sand, gravel, conglomerate, sandstone, siltstone, & shale. Grades into sandy limestone & dolomite. | Yields small to large quantities of fresh to slightly saline water in the study area. | |
| | | | | | | | Pearsall Member | Predominately shale interbedded with sand; however, in the calcareous facies, the unit is composed almost entirely of calcareous sediments. | Locally yields small amounts of water. |
| | | | | | | | | Cow Creek Limestone member | Massive, often sandy, dolomitic limestone, frequently forming cliffs and waterfalls. Contained gypsum & anhydrite beds. |
| | | | Hammett Shale Member | | | | Shale & clay with some sand, dolomitic limestone & conglomerate. | Not known to yield water in the study area. | |
| | | | Sligo Member | | | | Lower Trinity | Limestone, dolomite, occasionally sandy, & shale. Thins to the west. | Yields moderate to large quantities of fresh to moderately saline water. |
| | | | | | | | | Basal conglomerate grading upward into a mixture of sand, siltstone, & shale, with some limestone beds. | |
| | | Hosston Member (Sycamore Sand in outcrop) | | | | | | | |
| | | Pre-cretaceous | | | | | | Conglomerate, sandstone, & shale, siltstone, & some limestone. | Locally yields small amounts of useable water. |

30 TAC §230.10 Determination of Groundwater Availability

To fulfill the requirements of this groundwater availability certification for platting and determine if adequate groundwater is available for the proposed subdivision, TGI reviewed files and datasets from the Texas Water Development Board (TWDB), TCEQ, Texas Railroad Commission (RRC), the University of Texas Bureau of Economic Geology (BEG), the United States Geological Survey (USGS), and TGI's in-house files. Work products created in fulfillment of this certification included in this attachment are:

- Figure 1 – Surface Geology Map
- Figure 2 – Simulated Well Layout
- Submitted Driller's Reports for Test Wells and Observation Wells
- Well Diagrams for Test Wells and Observation Wells
- 24-Hr Constant-Rate Pumping Test Results

At the end of the 24-hour pumping test for each pumping well a water sample was collected and delivered to a qualified laboratory (LCRA Environmental Laboratory Services) for analysis. However, at the time of completing this certification the results of the water quality analysis have not been received. The applicant (New RC Properties, LLC) will provide the water quality results and necessary evaluation when they are received from the laboratory. As stated earlier in the "General Groundwater Resource Information", generally, water within the Middle Trinity aquifer is of good quality and suitable for human consumption. Concentrations exceeding recommended TCEQ standards for total dissolved solids (TDS), iron, sodium, and sulfate are known to occur in wells completed to produce water from the Middle Trinity aquifer.

30 TAC §230.11(a) and (b) Groundwater Availability and Usability Statements

Calculations based on the Theis equation were conducted to estimate likely interference drawdown between wells located on and near the property. An analytical model (NT Theis) was used to solve the Theis equation for multiple pumping wells at multiple locations. Two (2) different groups of scenarios were run to estimate the interference drawdown. The first group of scenarios evaluated was the long-term estimated interference drawdown at full build out for the proposed subdivision. TGI modeled every lot pumping a well from the center point of the lot for 10 and 30 years (See Figure 2 for distribution of simulated pumping wells). An average pumping rate of 0.31 gpm and 0.42 gpm were used each time frame. The average pumping rates are based on an average household of three (3) and four (4) people and an average water use per person of 150 gallons per day. Table 2 below shows the estimated drawdown due to pumping and interference from neighboring wells, the estimated drawdown at points along the proposed subdivision, and the approximate extent of the cone of depression.

Table 2. Long-term Estimated Drawdown.

| Duration (Years) | | Estimated Drawdown (pumping and Interference) at Simulated Wells per Household (feet) | | Estimated Drawdown at Subdivision Boundary (feet) | | Approximate Extent of Cone of Depression | |
|------------------|------------|---|------------------|---|------------------|--|------------------------|
| | | 3 ppl (0.31 gpm) | 4 ppl (0.42 gpm) | 3 ppl (0.31 gpm) | 4 ppl (0.42 gpm) | 3 ppl (0.31 gpm) | 4 ppl (0.42 gpm) |
| 10 | Min (feet) | 37 | 50 | 38 | 51 | 40,000 ft (7.5 miles) | 70,000 ft (13.2 miles) |
| | Max (feet) | 50 | 68 | 43 | 59 | | |
| 30 | Min (feet) | 49 | 66 | 50 | 67 | 45,000 ft (8.5 miles) | 75,000 ft (14.2 miles) |
| | Max (feet) | 62 | 84 | 55 | 75 | | |

The calculations are based on an average transmissivity of 600 gpd/ft, a short-term storage coefficient of 0.0001, and a long-term storage coefficient of 0.001. The model does not allow for recharge and hydraulic boundaries. Therefore, Table 2 provides a likely “worst-case” scenario and likely overestimates the actual impacts due to pumping on the property. Typically, the wells will be used for short periods (minutes to hours) and then shut off and the water level will be allowed to recover between periods of operation. The second group of runs evaluated the short-term effect of a single well pumping at 5, 10, and 15 gpm for a duration of 1, 4, 8, and 24 hours. Pumping rates are based on the premise that peak pumping may occur at the maximum pumping rates for the wells. Table 3 below shows the estimated interference drawdown for a pumping well on wells 50 to 100 feet apart.

Table 3. Short-term Estimated Drawdown.

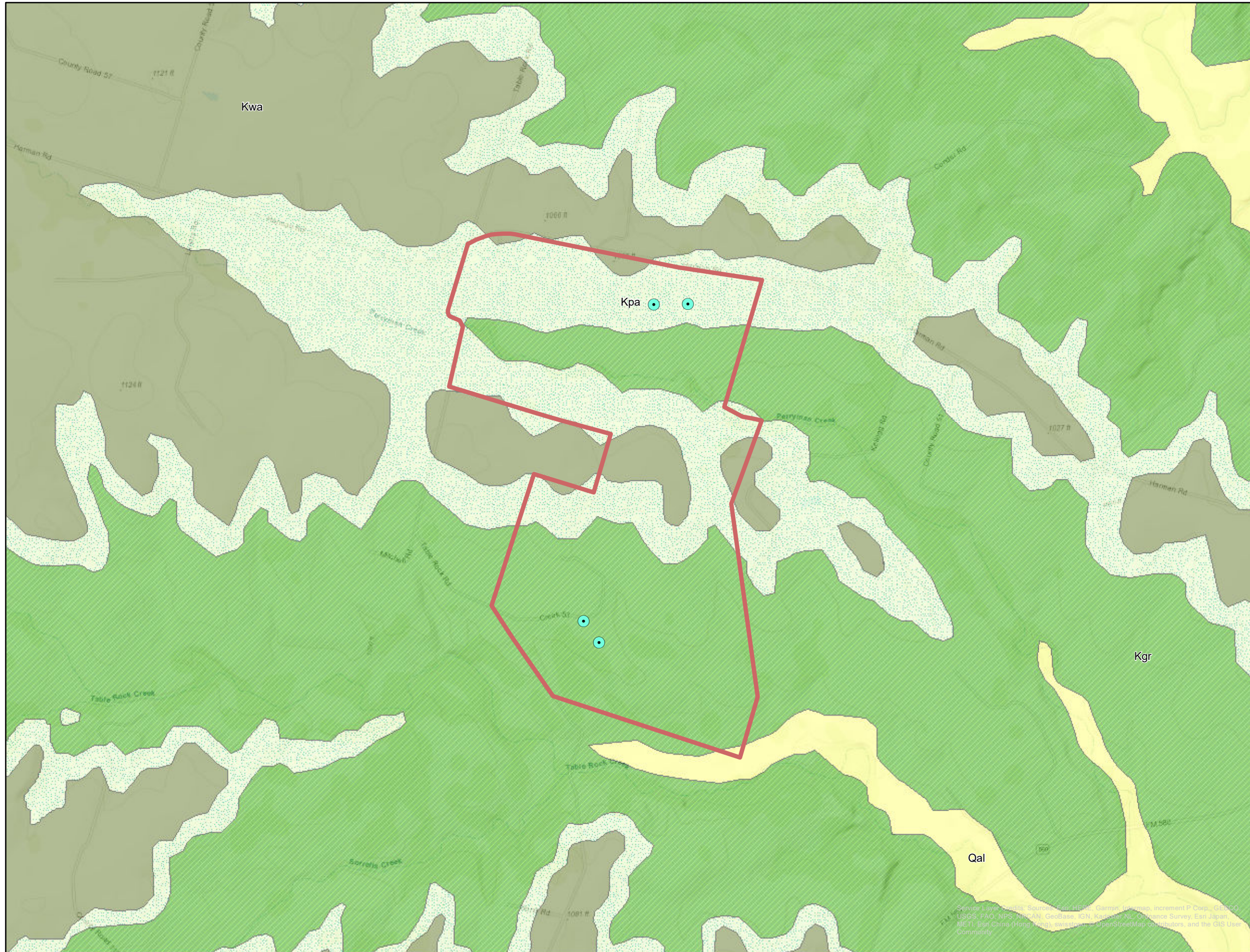
| Distance (feet) | Estimated Drawdown (feet) | | | | | | | | | | | |
|---------------------|---------------------------|----|----|----|------------------|----|----|----|------------------|----|----|----|
| | 5 gpm | | | | 10 gpm | | | | 15 gpm | | | |
| | Duration (hours) | | | | Duration (hours) | | | | Duration (hours) | | | |
| | 1 | 4 | 8 | 24 | 1 | 4 | 8 | 24 | 1 | 4 | 8 | 24 |
| Pumping Well | 11 | 12 | 13 | 14 | 21 | 24 | 25 | 28 | 32 | 36 | 38 | 41 |
| 50 | 3 | 5 | 5 | 6 | 7 | 9 | 11 | 13 | 10 | 14 | 16 | 19 |
| 100 | 2 | 3 | 4 | 5 | 4 | 7 | 8 | 10 | 6 | 10 | 12 | 15 |
| 250 | 1 | 2 | 2 | 3 | 1 | 3 | 4 | 6 | 2 | 5 | 7 | 10 |
| 500 | 0 | 1 | 1 | 2 | 0 | 1 | 2 | 4 | 0 | 2 | 3 | 6 |
| 750 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 3 | 0 | 1 | 2 | 4 |
| 1,000 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 3 |
| 1,500 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |

Wells completed to the Middle Trinity aquifer should generally be capable of producing between 5 and 15 gpm or more. According to the rules of the Middle Trinity Groundwater Conservation District (MTGCD), any well drilled within the proposed subdivision on a lot that is less than 10 acres is not exempt or requires a permit. MTGCD has rules regulating the spacing of wells requiring a permit (Rule 7.4). Wells with a casing diameter of 4-inch or less must be a minimum of 300 feet from any existing wells, four (4) to 5-inch wells must be 400 feet from any existing well, and five (5) to 6-inch wells must be 500 feet from any exiting well. The recommended well spacing is minimum spacing allow according to Rule 7.4 of MTGCD’s rules.

The model scenarios above do not incorporate any other pumping from surrounding wells in the area. Currently, the proposed subdivision is not near high-density developments and the Middle and Lower Trinity aquifers are not highly pumped, locally. However, if the area is developed further or several

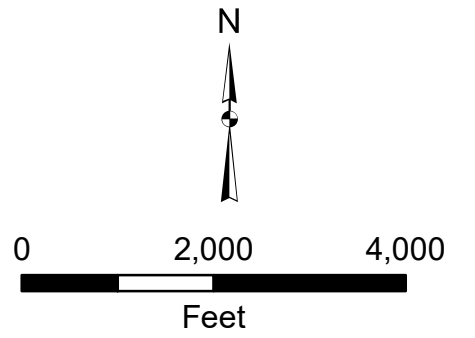
large capacity wells are completed near the proposed subdivision, then local water levels could be affected. Also, as stated above, the model utilized does not consider recharge and the estimated drawdowns are likely overestimated.

The Middle Trinity aquifer is capable of reliably producing good-quality groundwater to meet the needs of the proposed subdivision for domestic groundwater use. Typical domestic wells completed to the Middle Trinity aquifer will likely be capable of producing between 5 to 15 gpm, or possibly more. The Lower Trinity aquifer could potentially supply additional water to the proposed subdivision. Regionally, the Lower Trinity aquifer is known to produce moderate to large quantities of good-quality water.



Explanation

- Test Wells
- ⬢ Property Boundary
- Geology**
- Qal *Alluvium*
- Qt *Fluvialite terrace deposits*
- Ked *Edwards Limestone*
- Kc *Comanche Peak Limestone*
- Kwa *Walnut Clay*
- Kpa *Paluxy Formation*
- Kgr *Glen Rose Formation*

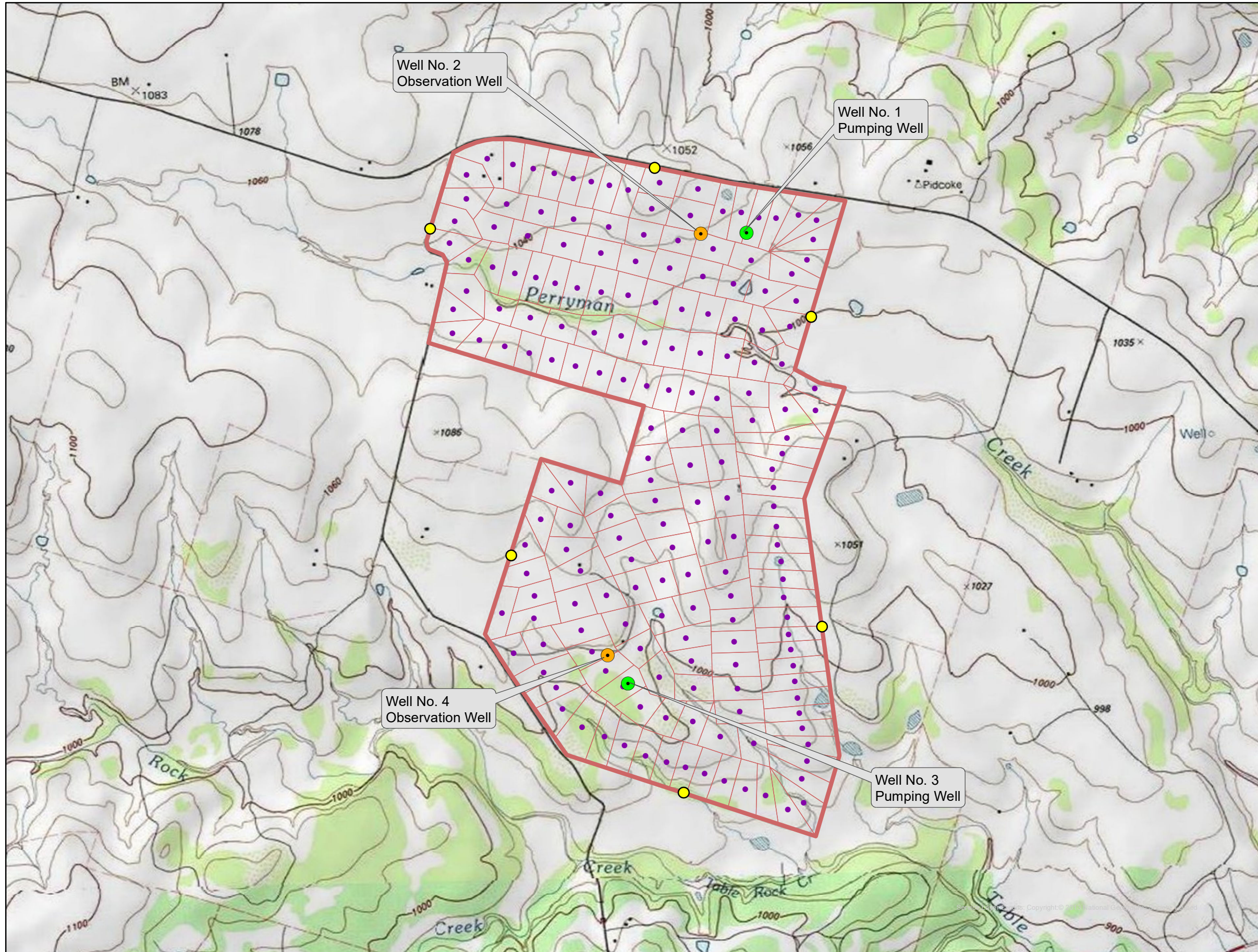


New RC Properties, LLC.

High Creek Ranch

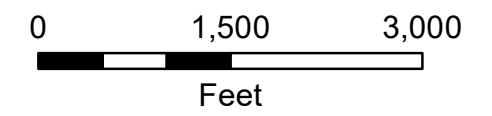
Figure 1 -
Surface Geology

Service Layer Credits: Sources: Esri, HERE, Garmin, Swiremap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRC, GEBCO, IGN, Intermap, NL, Orange Survey, Esri, Japan, METI, Esri, China (Hong Kong), Swiremap, OpenStreetMap contributors, and the GIS User Community



Explanation

- Pumping Well
- Observation Well
- Simulated Wells
- Point along subdivision boundary where drawdown was estimated.
- Proposed Lot
- Approximate Subdivision Boundary



*New RC
Properties, LLC.*

High Creek Ranch

Figure 2 -
Simulated Wells

STATE OF TEXAS WELL REPORT for Tracking #550399

| | |
|---|--|
| Owner: New RC Properties, LLC | Owner Well #: 1 |
| Address: 11601 W Hwy 290 A101 Box 352 Austin, TX 78737 | Grid #: 40-41-7 |
| Well Location: 3885 Harmon Rd Copperas Cove, TX 76522 | Latitude: 31° 16' 36" N |
| Well County: Coryell | Longitude: 097° 57' 35" W |
| Number of Wells Drilled: 4 | Elevation: 1028 ft. above sea level |

| | |
|-------------------------------|-------------------------------|
| Type of Work: New Well | Proposed Use: Domestic |
|-------------------------------|-------------------------------|

Drilling Start Date: **7/15/2020** Drilling End Date: **7/15/2020**

| | <i>Diameter (in.)</i> | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> |
|-----------|-----------------------|------------------------|---------------------------|
| Borehole: | 8.75 | 0 | 20 |
| | 6.75 | 20 | 470 |

Drilling Method: **Air Rotary**

Borehole Completion: **Straight Wall**

| | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> | <i>Description (number of sacks & material)</i> |
|--------------------|------------------------|---------------------------|---|
| Annular Seal Data: | 0 | 20 | Cement 5 Bags/Sacks |

Seal Method: **Hand Mixed**

Distance to Property Line (ft.): **No Data**

Sealed By: **Driller**

Distance to Septic Field or other
concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

| | |
|---|--------------------------------------|
| Surface Completion: Surface Sleeve Installed | Surface Completion by Driller |
|---|--------------------------------------|

Water Level: **No Data**

Packers: **Rubber at 20 ft.
Rubber at 400 ft.
Rubber at 405 ft.**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 20 GPM after 1 hours, no drawdown specified**

Water Quality: **Strata Depth (ft.)** **No Data** **Water Type** **No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Lucy Creek Water Well Service**
PO Box 1847
Lampasas, TX 76550

Driller Name: **Juan Munoz** License Number: **54176**

Apprentice Name: **Mario Munoz** Apprentice Number: **60427**

Comments: **TDS: 508 PPM**

| Lithology: | | | Casing: | | | | | |
|---|--------------|------------------------------------|-------------------------------|-----------------------|-------------------|--------------|-----------|--------------|
| DESCRIPTION & COLOR OF FORMATION MATERIAL | | | BLANK PIPE & WELL SCREEN DATA | | | | | |
| Top (ft.) | Bottom (ft.) | Description | Dia (in.) | Type | Material | Sch./Gage | Top (ft.) | Bottom (ft.) |
| 0 | 11 | Red Soil | | | | | | |
| 11 | 15 | Caliche/Rock | 4.5 | Blank | New Plastic (PVC) | SDR-17 | 0 | 410 |
| 15 | 24 | Yellow Overburden | 4.5 | Perforated or Slotted | New Plastic (PVC) | SDR-17 0.125 | 410 | 470 |
| 24 | 38 | Grey Shale + Lime | | | | | | |
| 38 | 40 | Moist Grey Sand | | | | | | |
| 40 | 45 | Grey Shale + Lime | | | | | | |
| 45 | 49 | Sandy Grey | | | | | | |
| 49 | 61 | Grey Shale | | | | | | |
| 61 | 65 | Tan Sand | | | | | | |
| 65 | 73 | Grey Shale + Lime | | | | | | |
| 73 | 85 | White Lime | | | | | | |
| 85 | 135 | Grey Lime w/ Streaks of White Lime | | | | | | |
| 135 | 149 | White Lime | | | | | | |
| 149 | 179 | Grey/White Lime | | | | | | |
| 179 | 191 | Tan Sand | | | | | | |
| 191 | 379 | Grey/Shale + Lime | | | | | | |
| 379 | 389 | Tan Lime | | | | | | |

| | | |
|-----|-----|---|
| 389 | 391 | Fracture |
| 391 | 396 | Broken Tan Lime w/ Streaks of Brown Lime |
| 396 | 420 | Tan w/ Sticky Clay |
| 420 | 429 | Broken/H2O |
| 429 | 431 | Solid |
| 431 | 436 | Broken |
| 436 | 460 | Red Clay |
| 460 | 470 | Brown Clay |

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540**

STATE OF TEXAS WELL REPORT for Tracking #550402

| | |
|---|---|
| Owner: New RC Properties, LLC | Owner Well #: 2 |
| Address: 11601 W Hwy 290 A101 Box 352 Austin, TX 78737 | Grid #: 40-41-7 |
| Well Location: 3885 Harmon Rd Copperas Cove, TX 76522 | Latitude: 31° 15' 33" N |
| Well County: Coryell | Longitude: 097° 58' 00" W |
| Number of Wells Drilled: 4 | Elevation: 968 ft. above sea level |

| | |
|-------------------------------|-------------------------------|
| Type of Work: New Well | Proposed Use: Domestic |
|-------------------------------|-------------------------------|

Drilling Start Date: **7/16/2020** Drilling End Date: **7/16/2020**

| | <i>Diameter (in.)</i> | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> |
|-----------|-----------------------|------------------------|---------------------------|
| Borehole: | 8.75 | 0 | 20 |
| | 6.75 | 20 | 470 |

Drilling Method: **Air Rotary**

Borehole Completion: **Straight Wall**

| | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> | <i>Description (number of sacks & material)</i> |
|--------------------|------------------------|---------------------------|---|
| Annular Seal Data: | 0 | 20 | Cement 5 Bags/Sacks |

Seal Method: **Hand Mixed**

Distance to Property Line (ft.): **No Data**

Sealed By: **Driller**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

| | |
|---|--------------------------------------|
| Surface Completion: Surface Sleeve Installed | Surface Completion by Driller |
|---|--------------------------------------|

Water Level: **No Data**

Packers: **Rubber at 20 ft.
Rubber at 405 ft.
Rubber at 410 ft.**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 17 GPM after 1 hours, no drawdown specified**

Water Quality: **Strata Depth (ft.)** **No Data** **Water Type** **No Data**
 Chemical Analysis Made: **No**
 Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Lucy Creek Water Well Service**
PO Box 1847
Lampasas, TX 76550

Driller Name: **Juan Munoz** **License Number:** **54176**
Apprentice Name: **Mario Munoz** **Apprentice Number:** **60427**
Comments: **TDS: 880 PPM**

| Lithology: | | | Casing: | | | | | |
|--|---------------------|------------------------------|--|-----------------------|-------------------|------------------|------------------|---------------------|
| DESCRIPTION & COLOR OF FORMATION MATERIAL | | | BLANK PIPE & WELL SCREEN DATA | | | | | |
| <i>Top (ft.)</i> | <i>Bottom (ft.)</i> | <i>Description</i> | <i>Dia (in.)</i> | <i>Type</i> | <i>Material</i> | <i>Sch./Gage</i> | <i>Top (ft.)</i> | <i>Bottom (ft.)</i> |
| 0 | 3 | Topsoil | | | | | | |
| 3 | 7 | Caliche | 4.5 | Blank | New Plastic (PVC) | SDR-17 | 0 | 450 |
| 7 | 20 | Yellow/Brown Overburden | 4.5 | Perforated or Slotted | New Plastic (PVC) | SDR-17 0.125 | 450 | 470 |
| 20 | 24 | White/Tan Lime | | | | | | |
| 24 | 29 | Grey Lime | | | | | | |
| 29 | 275 | Grey Shale | | | | | | |
| 275 | 288 | Broken Grey Lime | | | | | | |
| 288 | 293 | Shale | | | | | | |
| 293 | 298 | Broken Lime | | | | | | |
| 298 | 312 | Grey Shale + Lime | | | | | | |
| 312 | 336 | Broken Grey Lime | | | | | | |
| 336 | 365 | Tan Lime | | | | | | |
| 365 | 450 | Brown Lime/Red Clay | | | | | | |
| 450 | 457 | Broken | | | | | | |
| 457 | 461 | Brown Clay | | | | | | |
| 461 | 470 | Mix White, Rock, Yellow Lime | | | | | | |

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540**

STATE OF TEXAS WELL REPORT for Tracking #550403

| | |
|---|--|
| Owner: New RC Properties, LLC | Owner Well #: 3 |
| Address: 11601 W Hwy 290 A101 Box 352 Austin, TX 78737 | Grid #: 40-41-7 |
| Well Location: 3885 Harmon Rd Copperas Cove, TX 76522 | Latitude: 31° 16' 36" N |
| Well County: Coryell | Longitude: 097° 57' 42" W |
| Number of Wells Drilled: 4 | Elevation: 1033 ft. above sea level |

| | |
|-------------------------------|-------------------------------|
| Type of Work: New Well | Proposed Use: Domestic |
|-------------------------------|-------------------------------|

Drilling Start Date: **8/3/2020** Drilling End Date: **8/4/2020**

| | <i>Diameter (in.)</i> | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> |
|-----------|-----------------------|------------------------|---------------------------|
| Borehole: | 8.75 | 0 | 20 |
| | 6.75 | 20 | 450 |

Drilling Method: **Air Rotary**

Borehole Completion: **Straight Wall**

| | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> | <i>Description (number of sacks & material)</i> |
|--------------------|------------------------|---------------------------|---|
| Annular Seal Data: | 0 | 20 | Cement 5 Bags/Sacks |

Seal Method: **Hand Mixed**

Distance to Property Line (ft.): **No Data**

Sealed By: **Driller**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

| | |
|---|--------------------------------------|
| Surface Completion: Surface Sleeve Installed | Surface Completion by Driller |
|---|--------------------------------------|

Water Level: **No Data**

Packers: **Rubber at 20 ft.
Rubber at 405 ft.
Rubber at 410 ft.**

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 15 GPM after 1 hours, no drawdown specified**

Water Quality: **No Data** **No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which
contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Lucy Creek Water Well Service**
PO Box 1847
Lampasas, TX 76550

Driller Name: **Juan Munoz** **License Number:** **54176**

Apprentice Name: **Mario Munoz** **Apprentice Number:** **60427**

Comments: **TDS: 1,370 PPM**

| Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL | | | Casing: BLANK PIPE & WELL SCREEN DATA | | | | | |
|---|--------------|----------------------------------|--|-----------------------|-------------------|-----------------|-----------|--------------|
| Top (ft.) | Bottom (ft.) | Description | Dia (in.) | Type | Material | Sch./Gage | Top (ft.) | Bottom (ft.) |
| 0 | 10 | Red Soil | | | | | | |
| 10 | 14 | Fine Tan Sand | 4.5 | Blank | New Plastic (PVC) | SDR-17 | 0 | 410 |
| 14 | 31 | Caliche Overburden | 4.5 | Perforated or Slotted | New Plastic (PVC) | SDR-17 0.125 | 410 | 450 |
| 31 | 131 | Grey Shale + White Lime | | | | | | |
| 131 | 141 | Tan Lime | | | | | | |
| 141 | 369 | Grey Lime | | | | | | |
| 369 | 381 | Tan Lime | | | | | | |
| 381 | 429 | Grey, White Lime | | | | | | |
| 429 | 441 | Tan/Orange/H2O Broken Brown Lime | | | | | | |
| 441 | 450 | Brown Clay | | | | | | |

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540**

STATE OF TEXAS WELL REPORT for Tracking #550404

| | | | |
|--------------------------|--|---------------|--------------------------|
| Owner: | New RC Properties LLC | Owner Well #: | 4 |
| Address: | 11601 W Hwy 290 A101 Box 352 Austin, TX 78737 | Grid #: | 40-41-7 |
| Well Location: | 3885 Harmon Rd Copperas Cove, TX 76522 | Latitude: | 31° 15' 30" N |
| Well County: | Coryell | Longitude: | 097° 57' 57" W |
| Number of Wells Drilled: | 4 | Elevation: | 1012 ft. above sea level |

| | |
|-------------------------------|-------------------------------|
| Type of Work: New Well | Proposed Use: Domestic |
|-------------------------------|-------------------------------|

Drilling Start Date: **8/4/2020** Drilling End Date: **8/4/2020**

| | <i>Diameter (in.)</i> | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> |
|-----------|-----------------------|------------------------|---------------------------|
| Borehole: | 8.75 | 0 | 20 |
| | 6.75 | 20 | 410 |

Drilling Method: **Air Rotary**

Borehole Completion: **Straight Wall**

| | <i>Top Depth (ft.)</i> | <i>Bottom Depth (ft.)</i> | <i>Description (number of sacks & material)</i> |
|--------------------|------------------------|---------------------------|---|
| Annular Seal Data: | 0 | 20 | Cement 5 Bags/Sacks |

Seal Method: **Hand Mixed**

Distance to Property Line (ft.): **No Data**

Sealed By: **Driller**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

| | |
|---|--------------------------------------|
| Surface Completion: Surface Sleeve Installed | Surface Completion by Driller |
|---|--------------------------------------|

Water Level: **No Data**

Packers: **Rubber at 20 ft.**
Rubber at 325 ft.
Rubber at 330 ft.

Type of Pump: **No Data**

Well Tests: **Jetted** **Yield: 25 GPM after 1 hours, no drawdown specified**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540**

New RC Properties, LLC.
Well No. 1
Tracking #550399

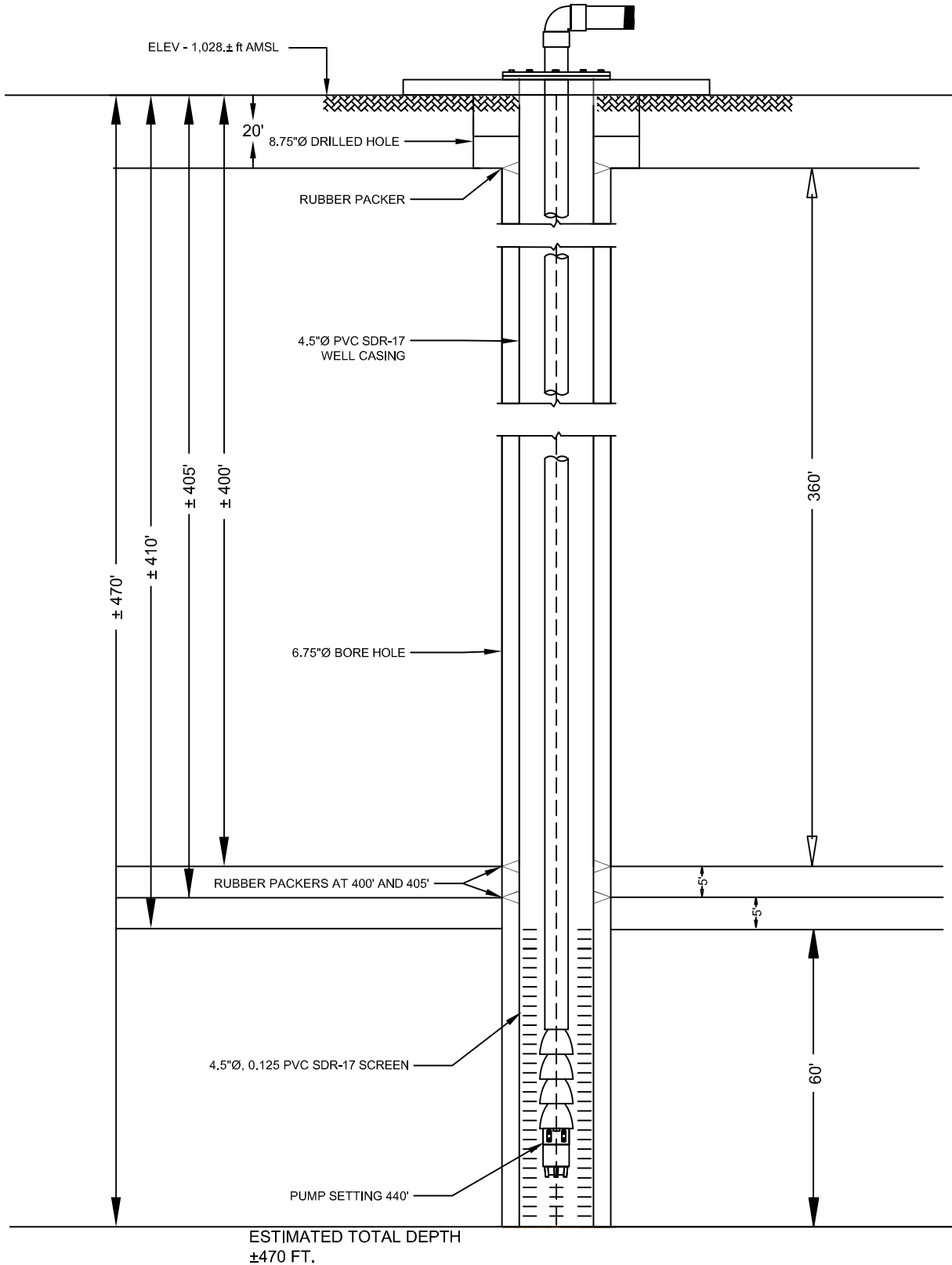


Diagram prepared as reported on Texas State Well Report

New RC Properties, LLC.
Well No. 2
Tracking #550402

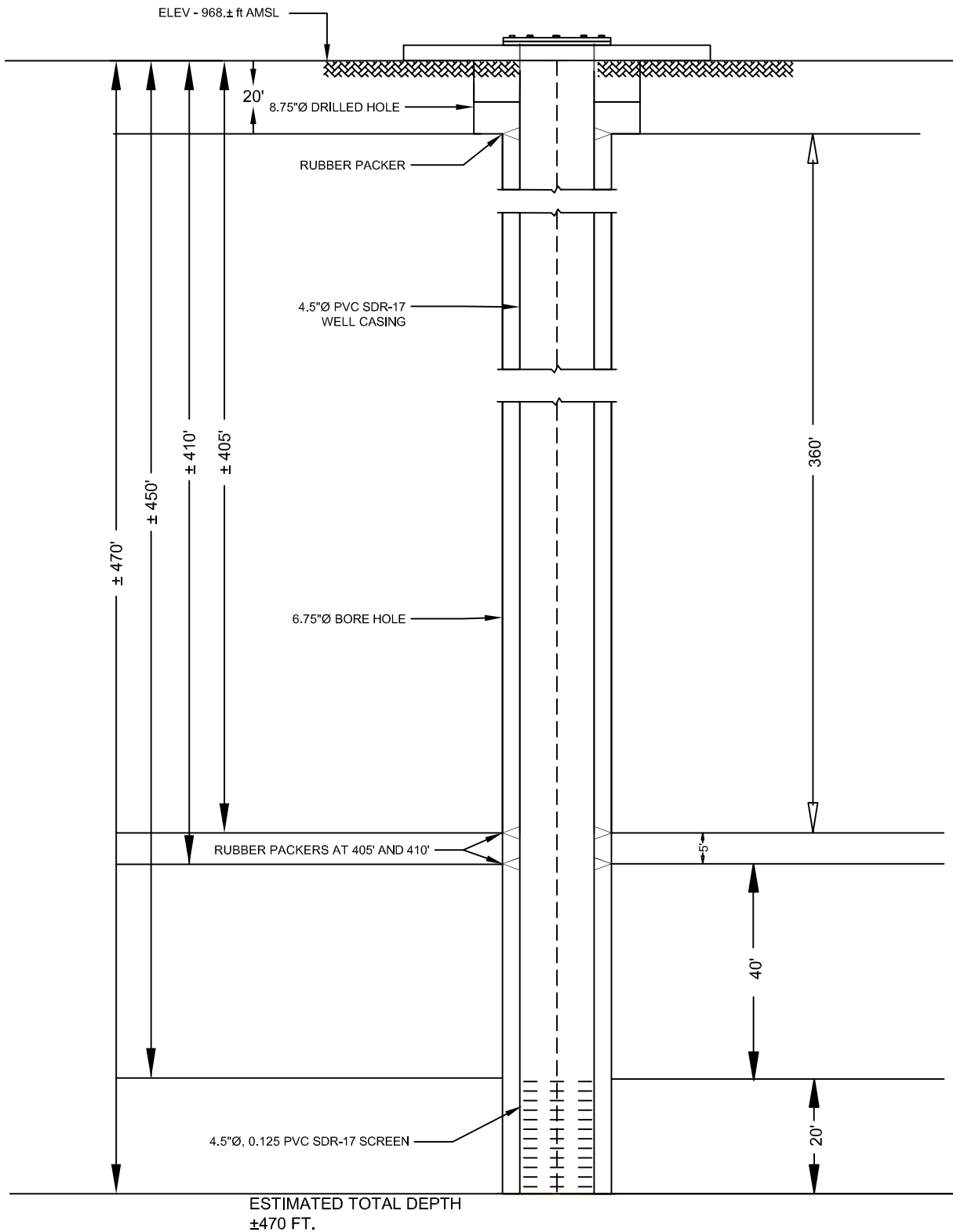


Diagram prepared as reported on Texas State Well Report

New RC Properties, LLC.
Well No. 3 Tracking #550403

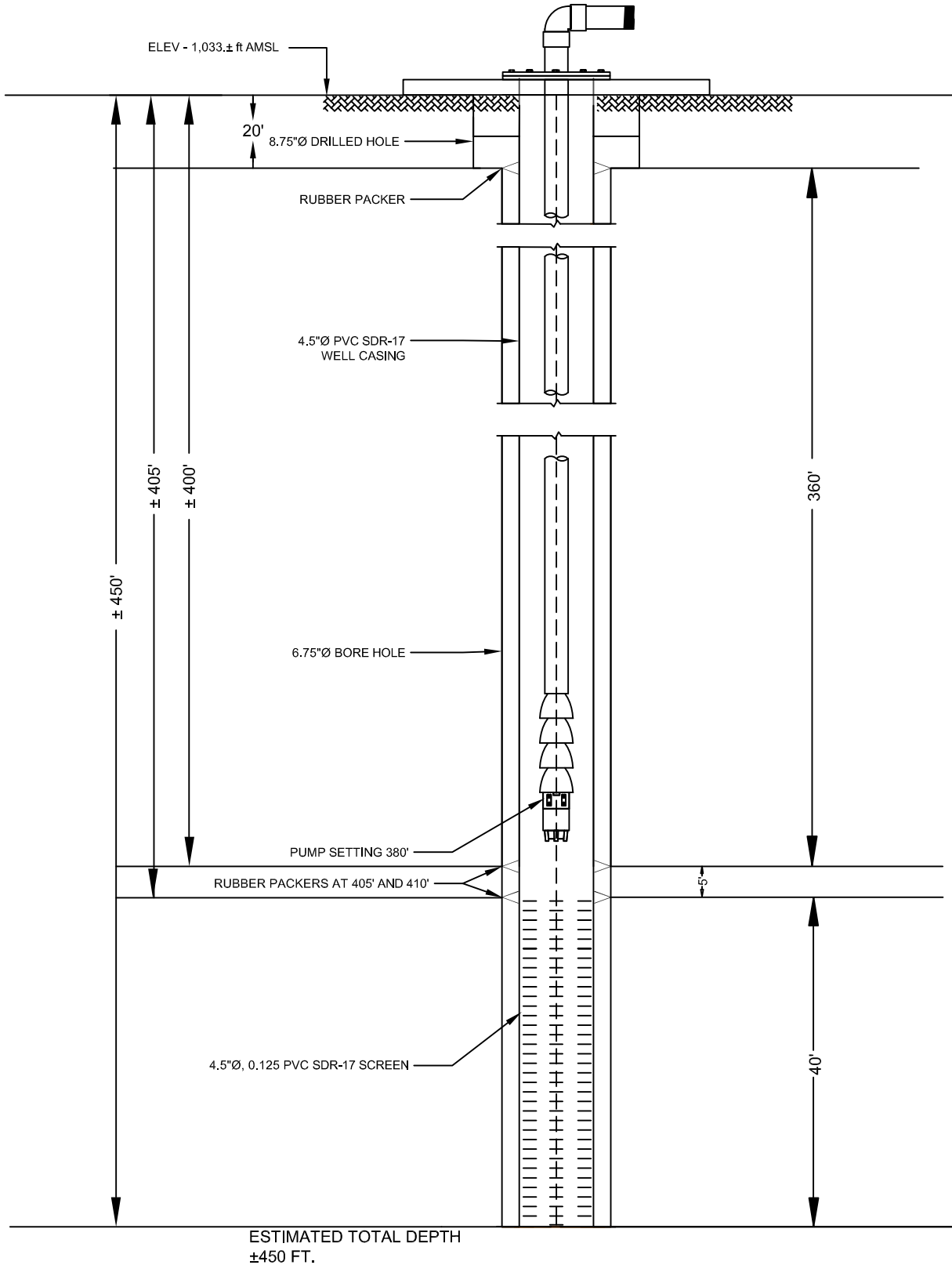


Diagram prepared as reported on Texas State Well Report

New RC Properties, LLC.
Well No. 4
Tracking #550404

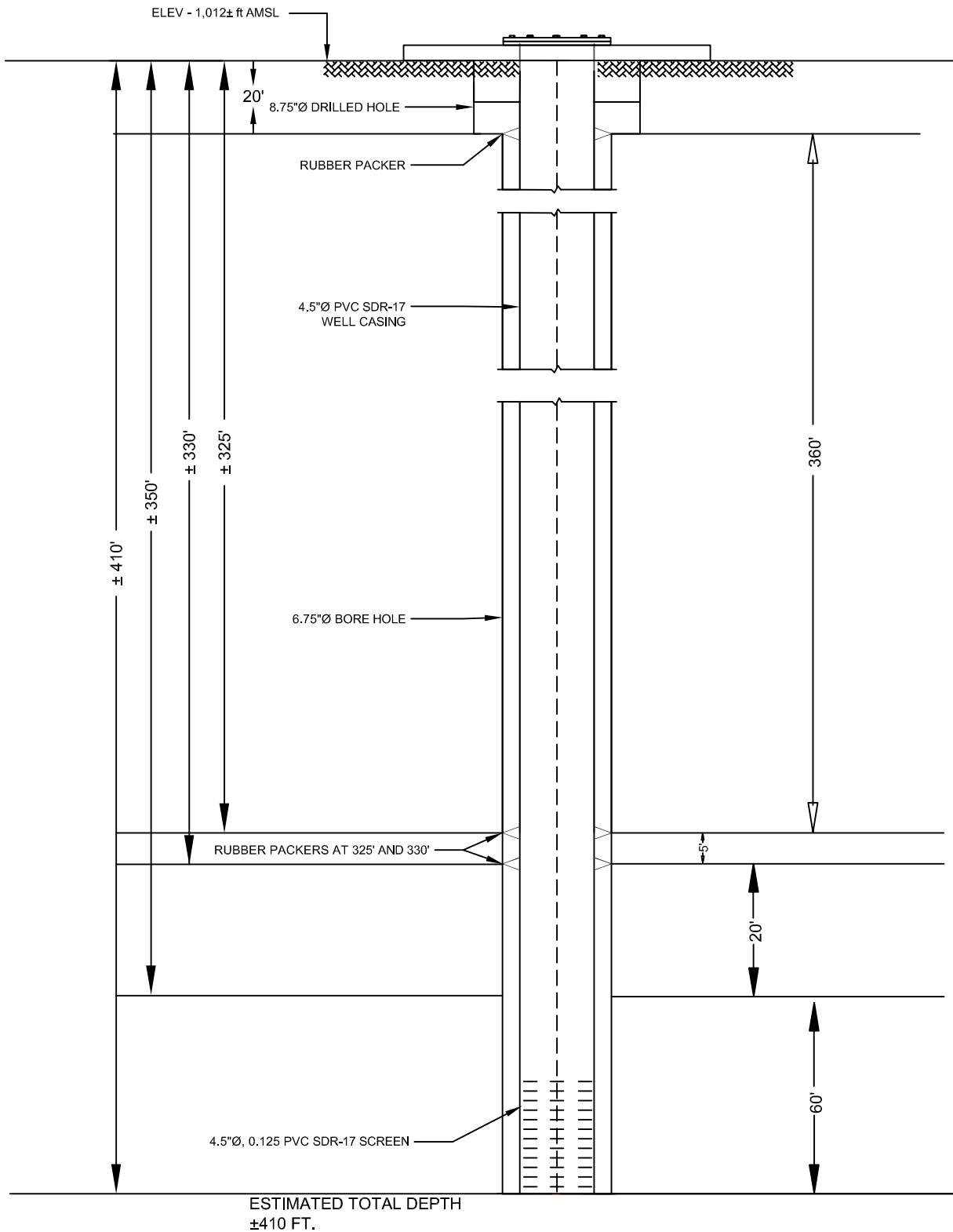
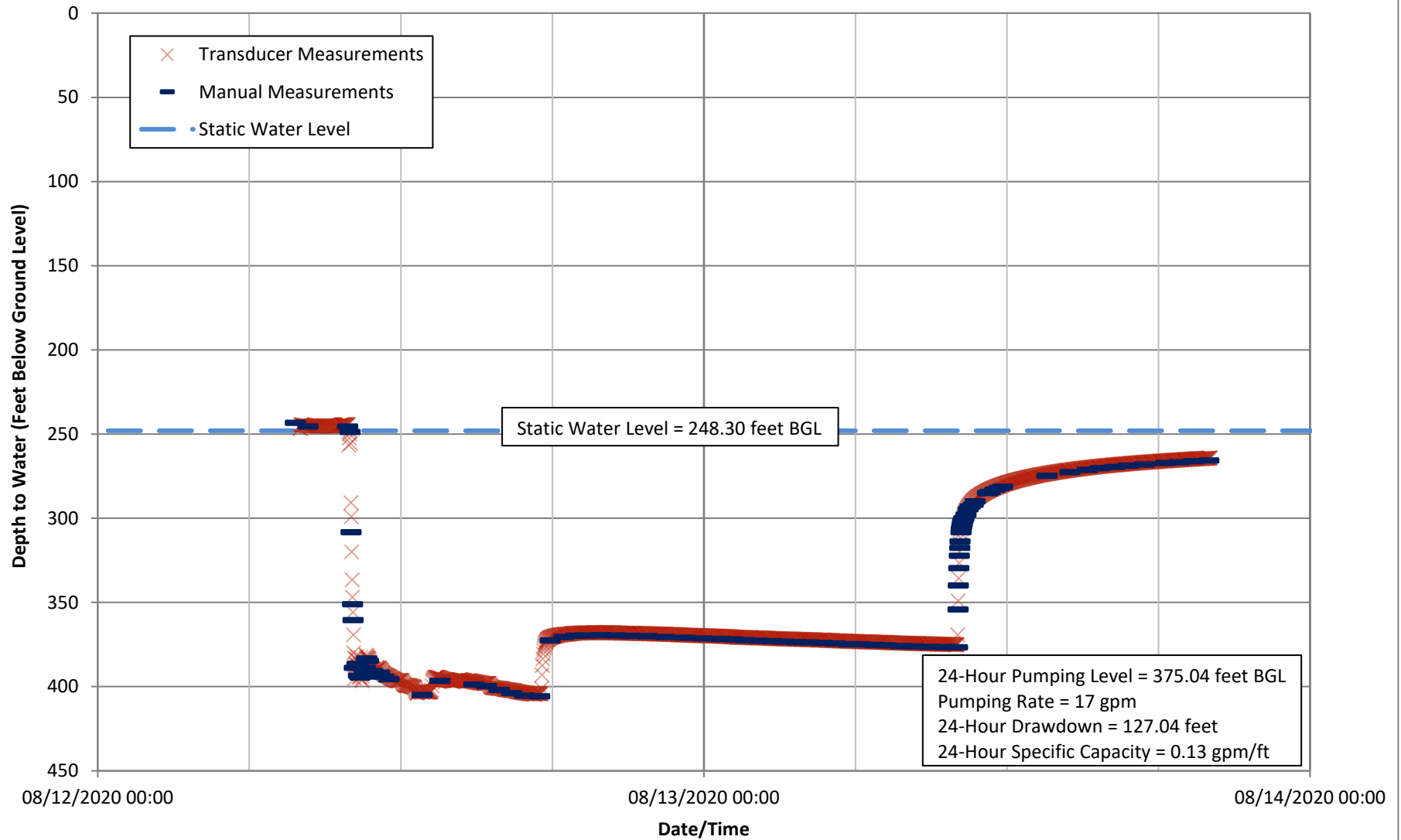


Diagram prepared as reported on Texas State Well Report

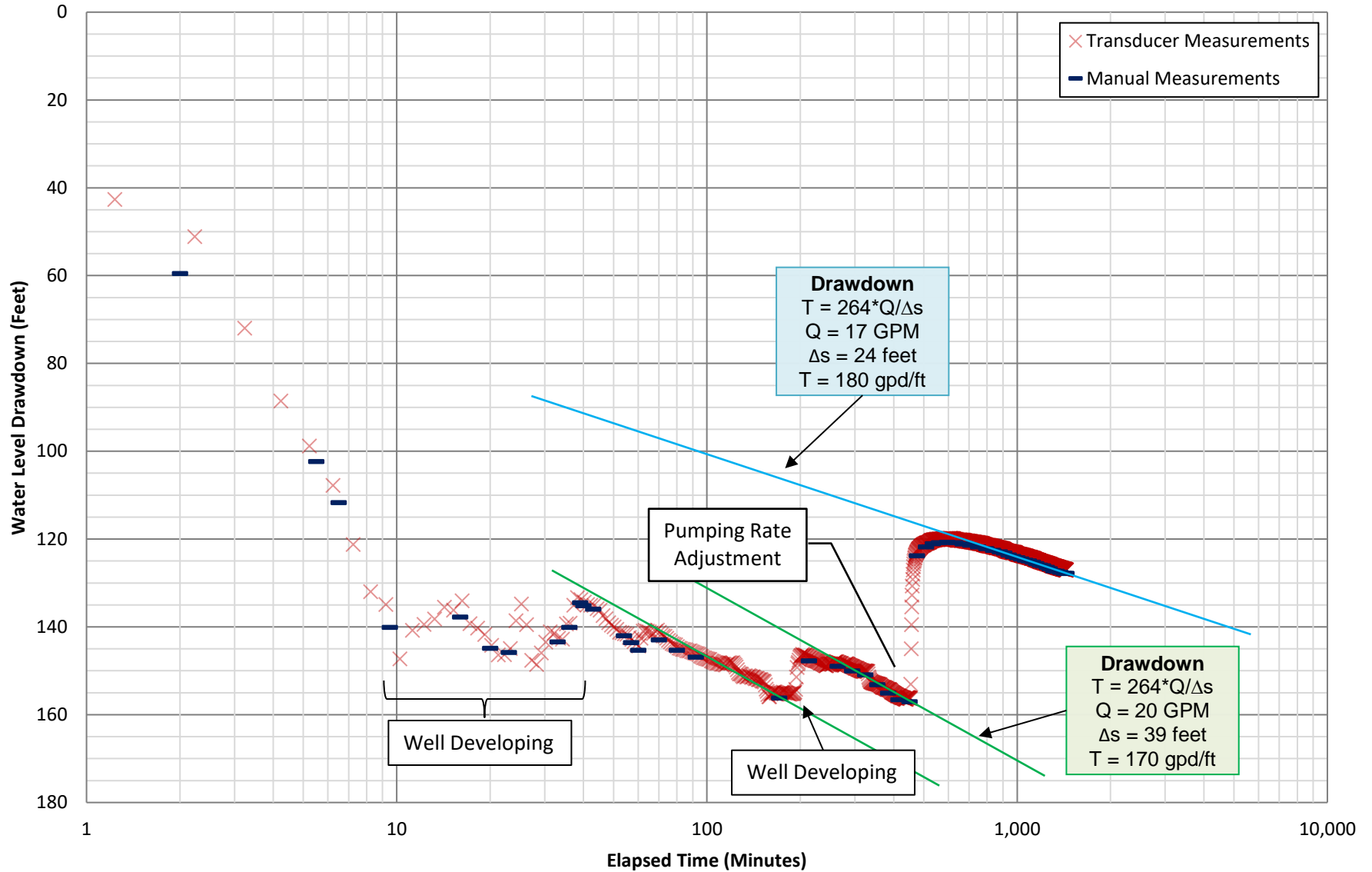
High Creek Ranch – Well No. 1

24-Hour Production Test

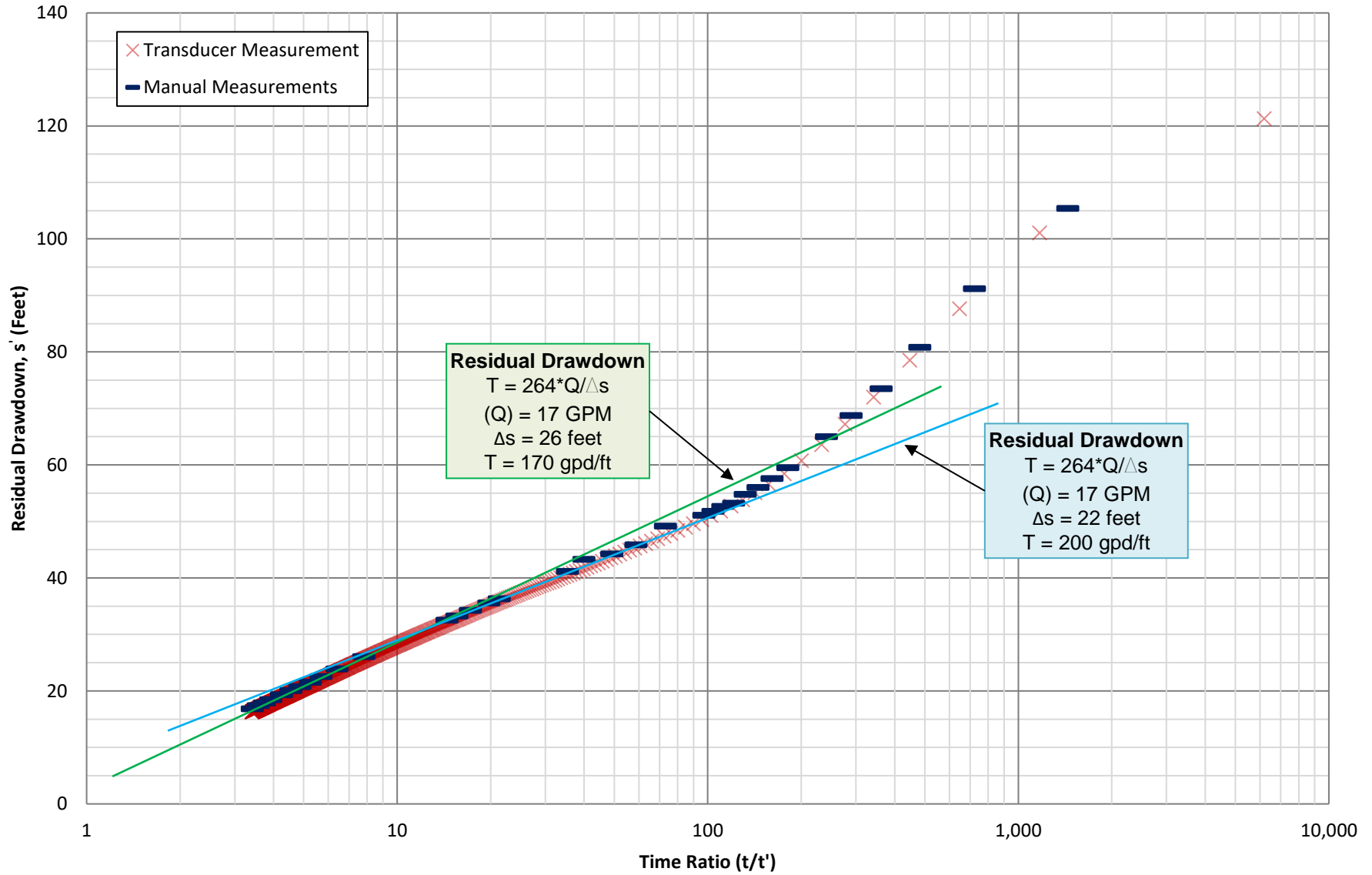
Hydrograph



High Creek Ranch – Well No. 1 Cooper-Jacob Drawdown Chart

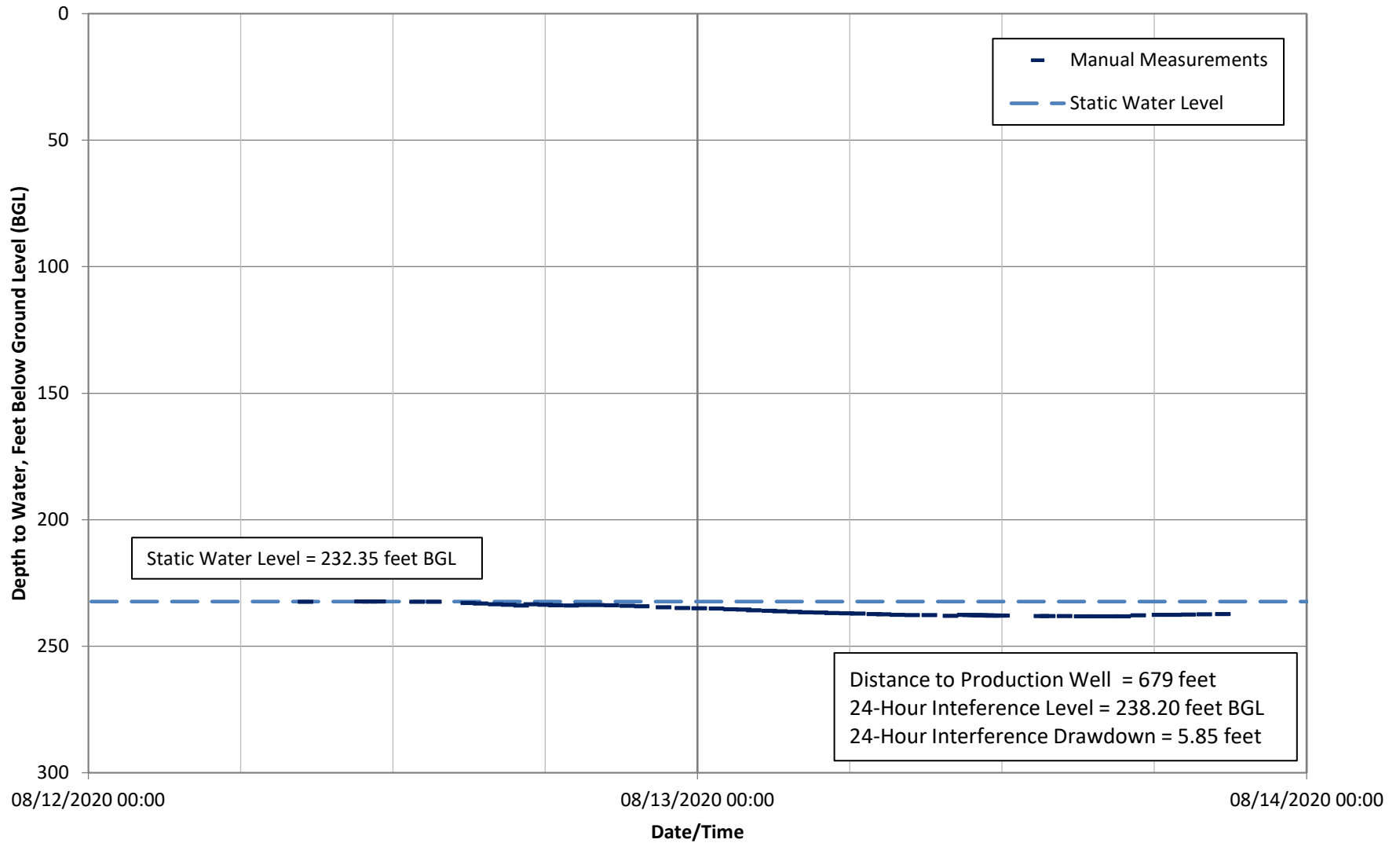


High Creek Ranch – Well No. 1 Cooper-Jacob Recovery Chart



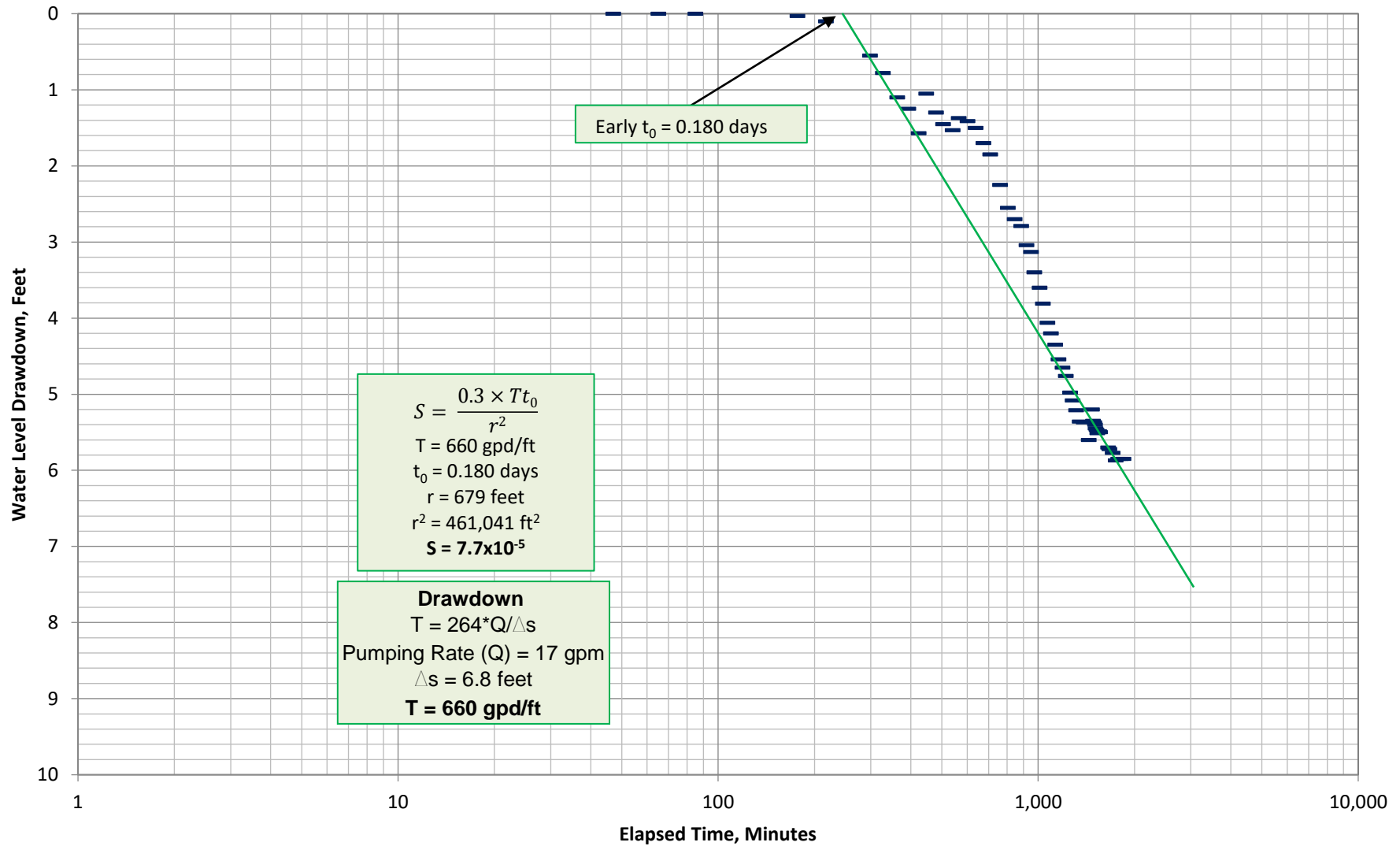
High Creek Ranch Well No. 1 24-Hour Test Well No. 2 Hydrograph

DRAFT



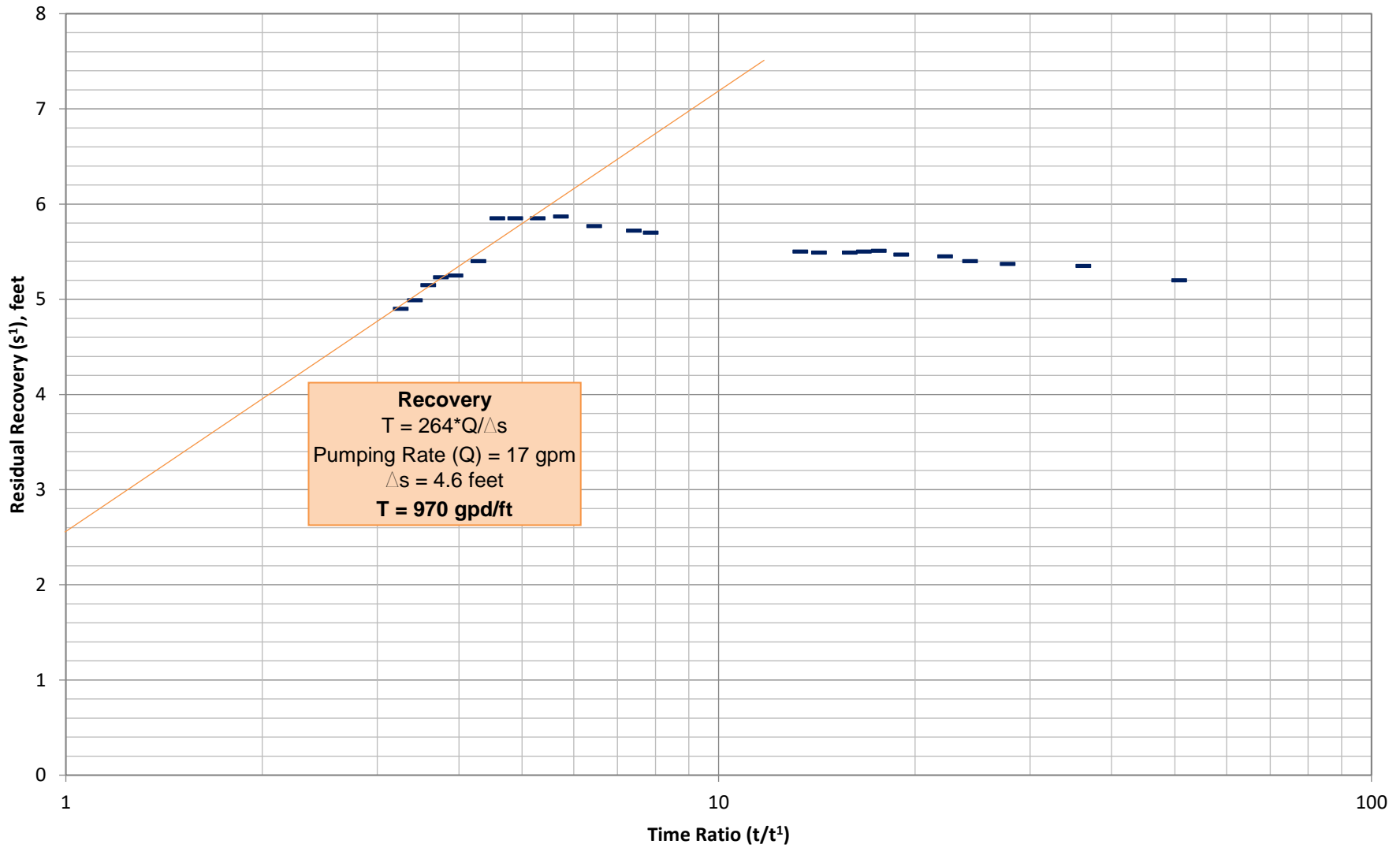
High Creek Ranch Well No. 1 24-Hour Test Well No. 2 Cooper-Jacob Chart (Drawdown)

DRAFT



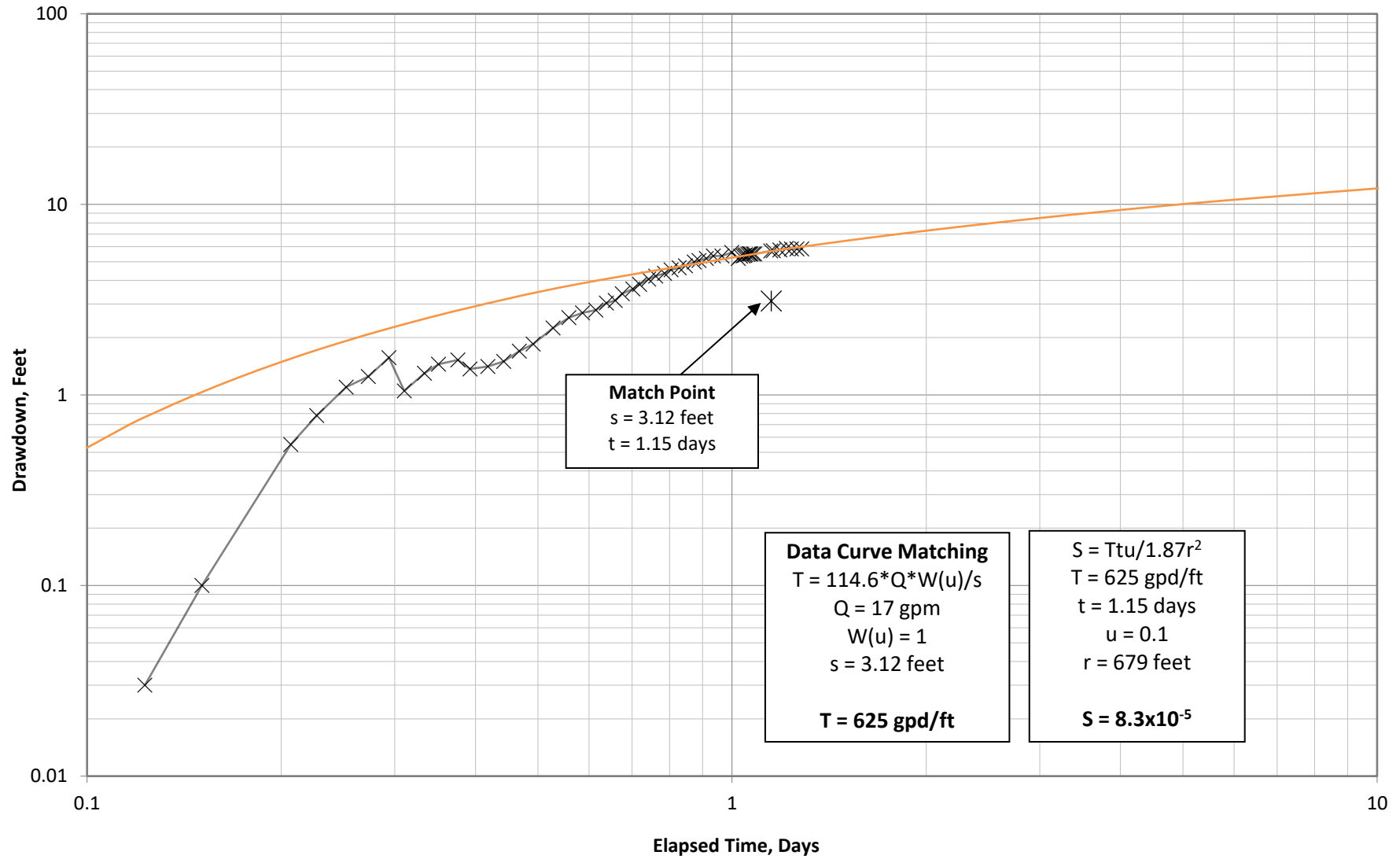
High Creek Ranch Well No. 1 24-Hour Test Well No. 2 Cooper-Jacob Chart (Recovery)

DRAFT



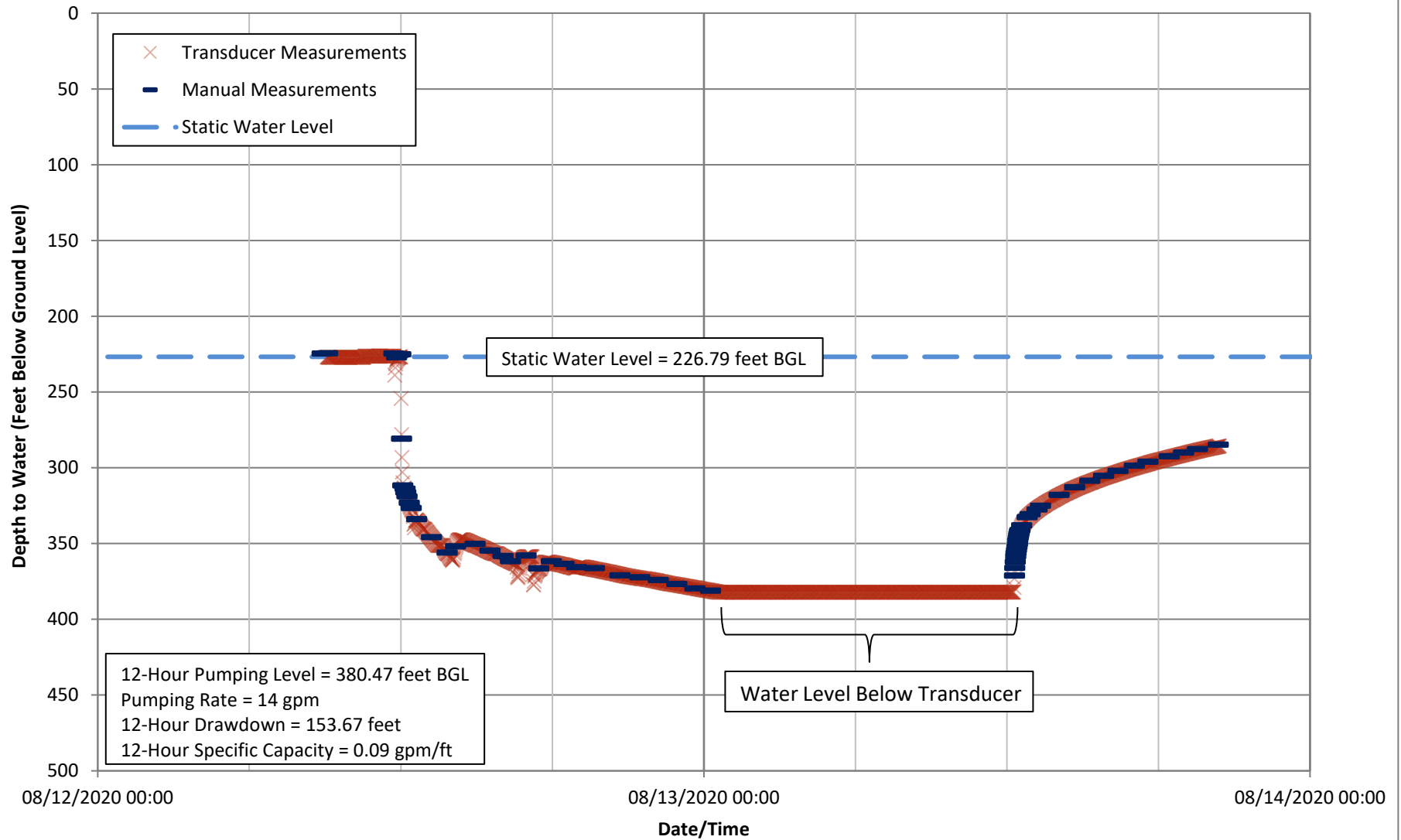
High Creek Ranch Well No. 1 24-Hour Test Well No. 2 Theis Curve

DRAFT

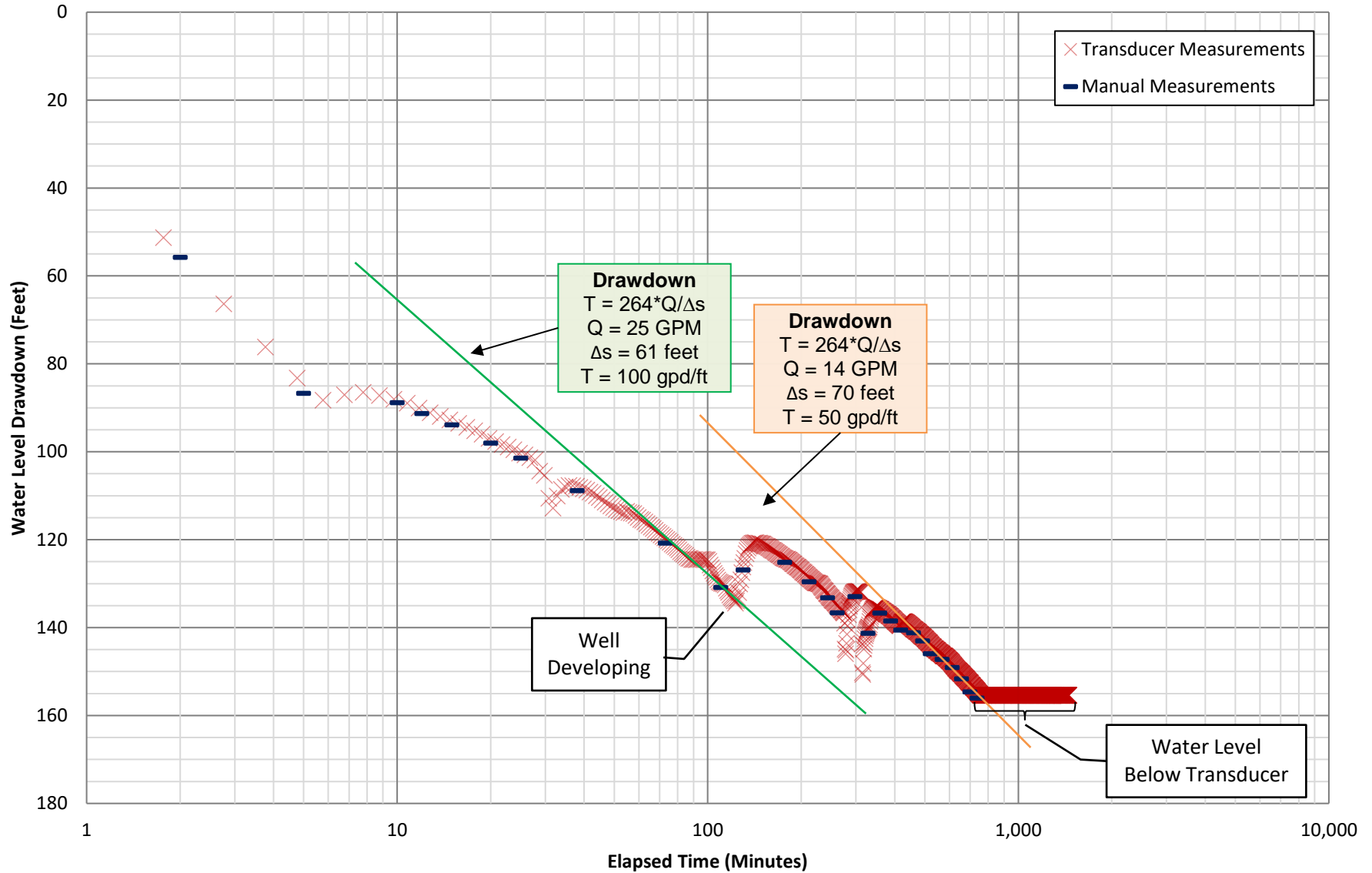


High Creek Ranch – Well No. 3

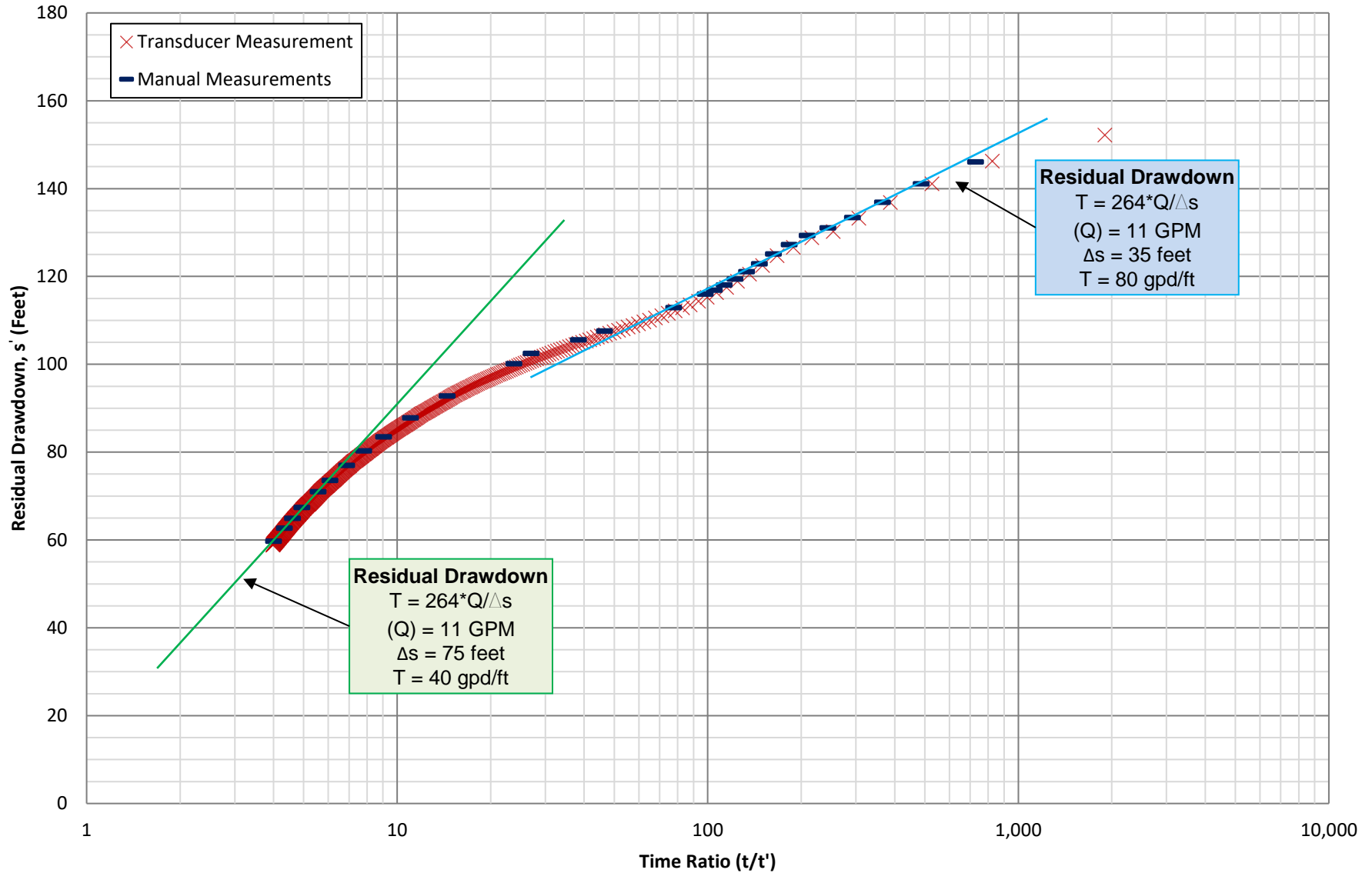
24-Hour Production Test Hydrograph



High Creek Ranch – Well No. 3 Cooper-Jacob Drawdown Chart

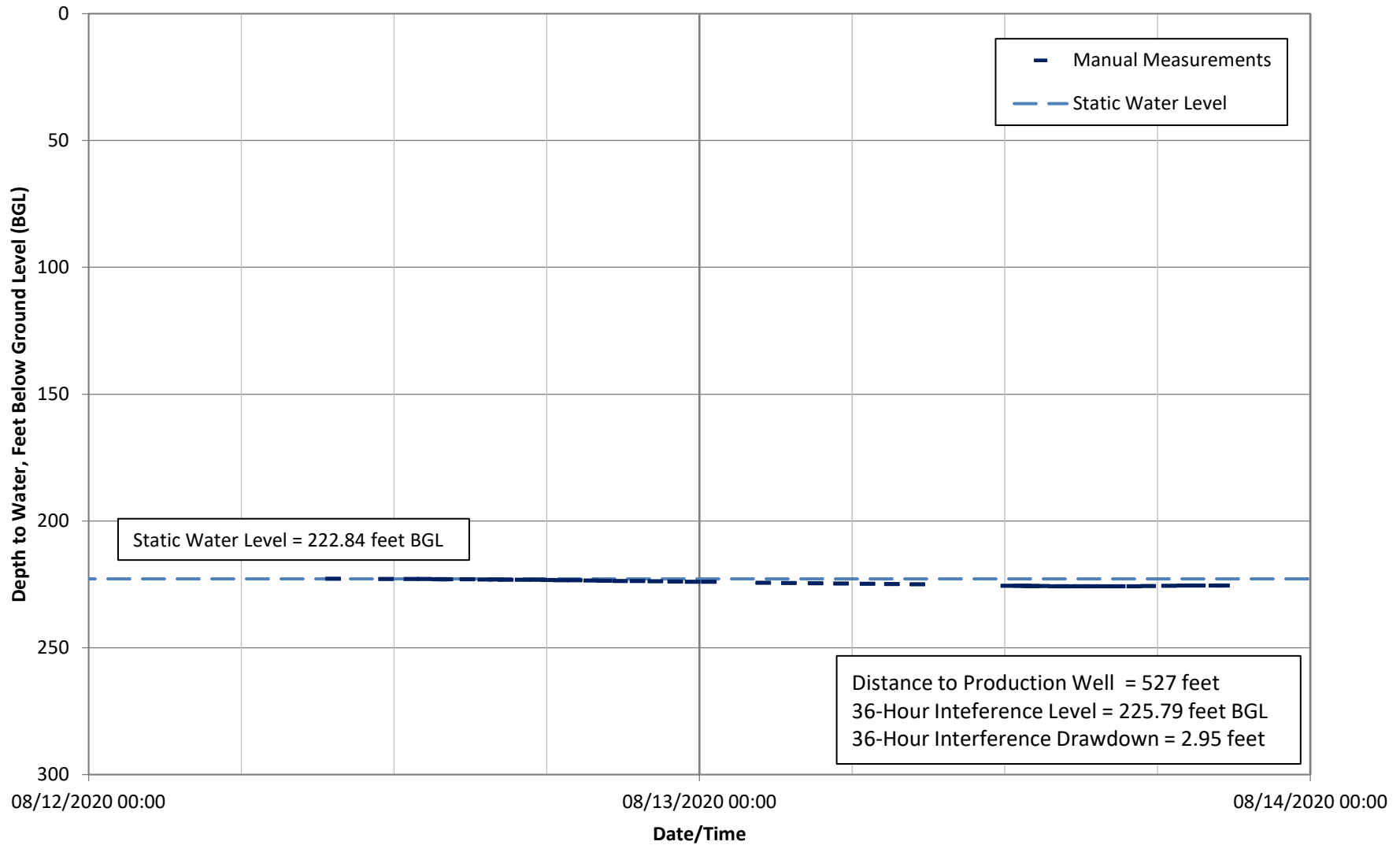


High Creek Ranch – Well No. 3 Cooper-Jacob Recovery Chart



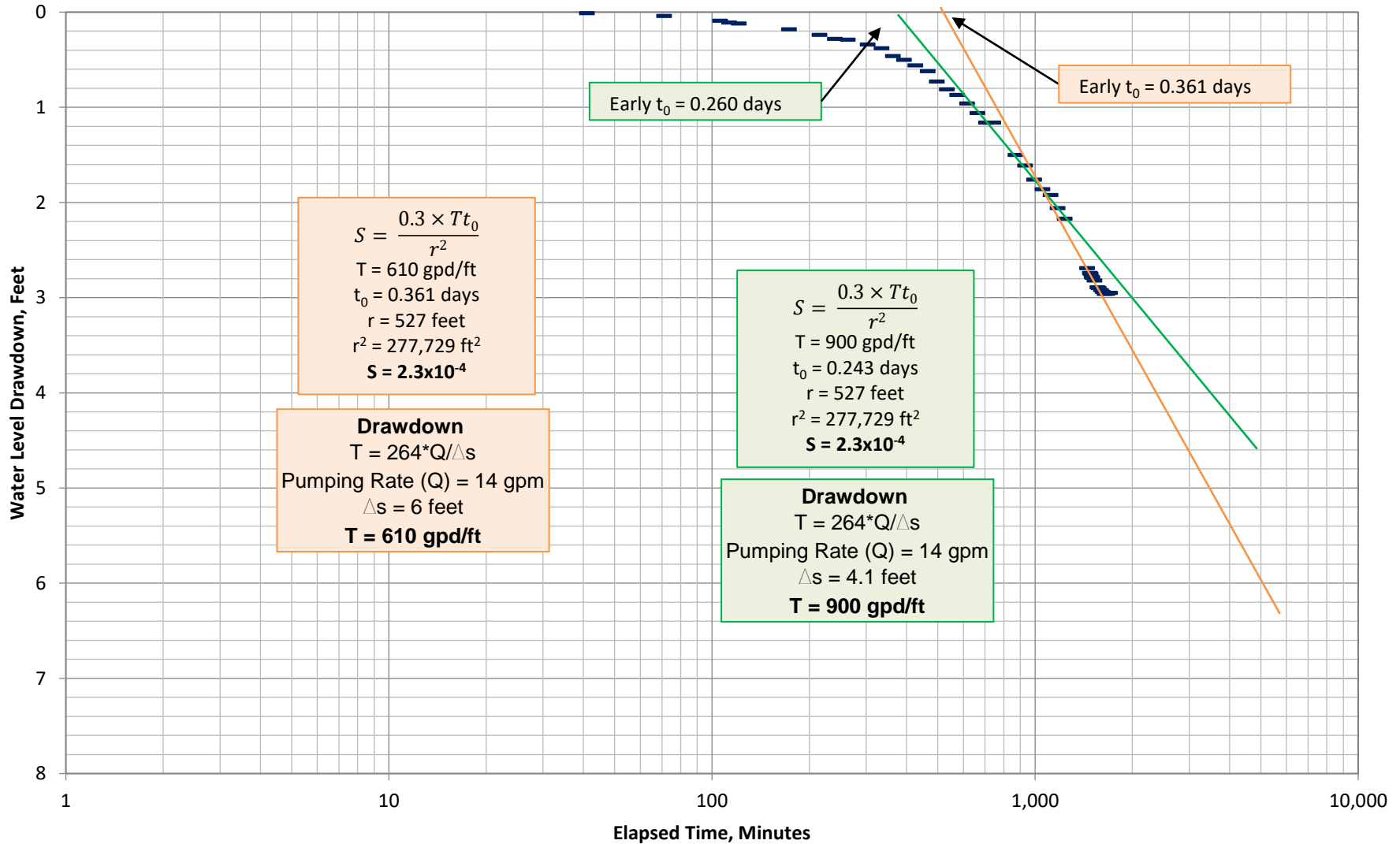
High Creek Ranch Well No. 3 24-Hour Test Well No. 4 Hydrograph

DRAFT



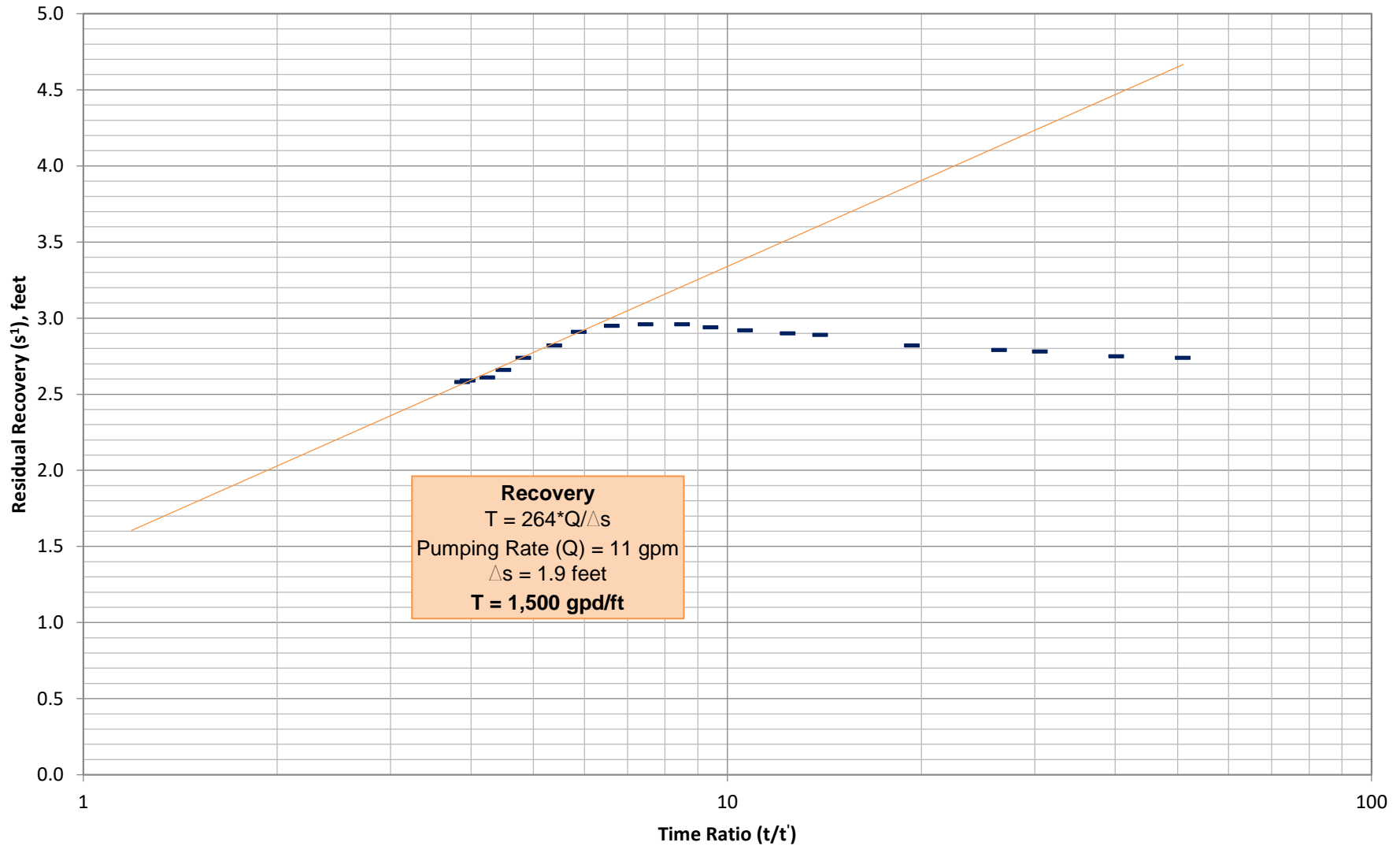
High Creek Ranch Well No. 3 24-Hour Test Well No. 4 Cooper-Jacob Chart (Drawdown)

DRAFT



High Creek Ranch
Well No. 3 24-Hour Test
Well No. 4 Cooper-Jacob Chart (Recovery)

DRAFT



High Creek Ranch Well No. 3 24-Hour Test Well No. 4 Theis Curve

DRAFT

