BOARD MEETING MINUTES

OF THE

SOUTHWESTERN TRAVIS COUNTY GROUNDWATER CONSERVATION DISTRICT

Via Telephone Conference

In accordance with the order of the Office of the Governor issued March 16, 2020, the SWTCGCD Board of Directors conducted the June Board Meeting as a remote access only meeting in order to advance the public health goal of limiting face-to-face meetings (also called "social distancing") to slow the spread of the Coronavirus (COVID-19). The meeting was open to the public and instructions for accessing the conference call were provided with the Notice of Meeting

Wednesday, November 11, 2020 at 10:00 am

1. **Call to order, declare meeting open to the public, take roll and declare quorum status**

   Director and Board President Scadden called the meeting of the Southwestern Travis County Groundwater Conservation District (SWTCGCD or District) Board of Directors to order at 10:00 AM on Wednesday November 11, 2020. Six District Directors were present on the conference call constituting a quorum, including Directors Hennings, Dower, Scadden, Hunt, Davis, and Van Ackeren. Director Urie was absent. Also present were Kodi Sawin, Kirk Holland, Legal Counsel Embrey, visitors Laurel Massey (Lake Creek resident), Marianna Mitchel and Maryanne Castles both with the Galleria, Lane Cockrell, and Pete Golde.

   At the request of Director Scadden all present introduced themselves.

2. **Public comments**

   Director Scadden called for public comments and there were no public comments.

3. **Discuss, consider, and possibly act on approving the previous meeting minutes**

   September 23, 2020 Minutes
   October 14, 2020 Minutes

   General Manager Sawin asked if there were any comments or questions on the minutes presented for approval. Director Scadden said there was an unresolved question regarding the motions to approve the resolutions adopting the Fee Schedule and the Rules. Mr. Golde clarified that Director Dower had asked a question regarding legal review of the Fee Schedule and the Rules and General Counsel Embrey proposed some language to be added to Director Dower's motions to address this question. Mr. Golde said that he did not feel that he understood this discussion sufficiently to be confident of the proper wording for Director Dower's motions.

General Counsel Embrey requested deferral of the approval of the September 23, 2020 minutes to allow him time to review further and he would bring this back at next month's Board meeting. Director Scadden said he supported delaying the approval of the September 23rd meeting minutes until next month and asked if there were any other question regarding these minutes.

Director Dower asked if it was appropriate to add the parenthetical Update: at the bottom of page 2 of the September 23, 2020 minutes, or should the minutes just reflect what was said at the meeting? Mr. Holland (who had provided the Update under discussion) opined that the draft minutes state what was said at the meeting but if someone has a correction it can be included as long as it is before the approval of the minutes by the Board. General Counsel Embrey said clarification is appropriate as long as it does not change what was said and as presented, it is clear that this is a clarification. After brief additional discussion it was the consensus of the Board that this is a good practice.

Director Davis said she had a question regarding adjacent property owner notification for well drilling (discussed in the second to last paragraph on page 3 of the minutes). Can an adjacent property owner simply call the GCD office and ask what is going on at a neighbor's property or do they have to make a formal public information request? General Counsel Embrey advised that the District would be obligated to respond to a legitimate public information request, but Director Scadden opined that as a customer-oriented entity if someone calls and asks about drilling activity on a neighbor's property, we should not require a FOIA request for the staff to respond with a simple answer. General Counsel Embrey clarified that he was speaking to what the District is required to respond to if the District wants to set a policy that the General Manager or staff and revel that information that is a separate matter. Mr. Holland pointed out that there is a notification process for adjacent landowners for Operating Permit applications.

Action on approval of the September 23rd and October 14th minutes was deferred until the December meeting.

4. General Manager's Report

General Manager Sawin presented the General Manager's report covering the following topics:

- Stakeholder communication and public inquiries
- Application and registration inquiries
- Drought stage status and outlook
- Regulatory Items and Updates
  - TWDB
  - TCEQ
  - GMA 9
  - Others
- Other Items of Interest not requiring Board action

Director Scadden advised, as a matter of disclosure, that he had spoken with Adrian Overstreet at a public event regarding questions Mr. Overstreet had and he referred Mr. Overstreet to the District staff. Director Scadden also expressed that he was grateful to have Lane Cockrell on board.

Director Hunt asked if the intent of the Well Drillers Workshop was to get feedback on Well Construction Standards from the Driller community as well as introducing them to the District? General Manager Sawin said she felt the workshop should allow the capture of input on the Well Construction Standards from the drillers.

Director Dower asked about any legal requirements to notify water supply companies of their obligation to pay Connection Fees. General Counsel Embrey said a simple letter could be sent as a courtesy, but the Public Hearings the District has noticed and held satisfy the legal notice requirements.

5. Receive, discuss, and take action as necessary for Board Committee Reports.

a. Finance – Director Urie was absent, and Director Scadden reviewed the Financial Report. As of October 31st, there was a $6,527.66 balance in the checking account and all bills had been paid. Director Dower has provided the $3,000 zero interest loan which completes the loan program and makes the balance in the checking account $9,527.66.

Director Scadden advised that there is a need to establish another email address (staff@swtcgcd.org) for Lane Cockrell and he would like to hear from the Board regarding this expenditure. The consensus of the Board was to go ahead with this email addition and Director Dower said he would set it up right away.

A copy of the October Financial Report (Reconciliation Detail) is attached as Exhibit A

b. Legislative – Director Davis said that there have been 400 bills filed so far for the upcoming Texas legislative session, no GCD related bills yet, but several GCDs have been identified for audits. Mr. Holland said SB 152 had just been filed by Senator Perry and is related to GCD regulatory issues; General Counsel Embrey noted that this bill was brought up by the Farm Bureau. Mr. Holland asked if Director Davis was a member of the TAGD Legislative Committee and she replied yes. He went on to say this committee is a good way to track bills. General Counsel Embrey advised of another bill HB 152 which was filed by Representative Buckley regarding frustration with the GCDs in Bell and Burnet Counties about pumpage from Williamson and Travis Counties where there are no GCDs (north of the Colorado River).

c. Science-Outreach – Director Hennings advised that TAGD has decided to hold a virtual Texas Groundwater Summit with recorded presentations. Also, the Texas Water Development Board Water for Texas meeting is scheduled for September 27th through 29th, and the GMA 9 Meeting is scheduled for December 14th (DFC Update). Director Hunt added that we will need to present a broad overview of our Groundwater Management Plan, just a high-level summary.

Director Dower said he would provide the website data by email {UPDATE: The website page views were 256 and there were no downloads last month}.

6. Discuss and possibly act on matters related to implementing District Rules, including but not limited to plans, forms, guidelines, and templates

General Counsel Embrey shared that he has kept a running list of potential Rules revisions as topics pop up. The deadline to submit paperwork on Non-Exempt Wells is December 31, 2020 but he suggests pushing that back to February 28, 2021 to give District staff more time and other considerations. He said the change will need to be made at the December 9th Board meeting and there will need to be a 20-day newspaper notice posted by November 19th. To support that we will need to have a special Board meeting in the next week or so to discuss potential revisions and issue notice.

Director Scadden said he had discussed a special meeting on November 16th with General Counsel Embrey and General Manager Sawin. He asked if this would work for the other Directors. Directors Hennings and Davis said no and Directors Van Ackeren, Dower, Hunt, and Scadden said yes. Director Urie was not present. It was agreed to meet at 10:00 AM on November 16th and Director Scadden said we can continue to work on revisions after the November 16th meeting and changes can be made at the hearing as necessary.

On a motion by Director Davis and a second by Director Van Ackeren the Board approved having a Special Board Meeting on November 16, 2020 at 10:00 AM – 6 Ayes to 0 Nays

Mr. Holland presented a table titled *Rules-Related Documents in Development* and asked if the Board was OK with the Rules Committee approving these documents and there being no objections, he said the Rules Committee would continue to approve the documents, only bringing significant issues to the Board should they arise.

A copy of the Rule-Related Documents in Development table is attached as Exhibit B

Mr. Holland then reviewed the latest mark-up of the *Guidelines for Aquifer Testing and Hydrogeological Reports* and asked for Board approval of the document with the changes he had just reviewed. Director Dower asked if changes to these guidelines constructed Rules changes therefore requiring a public hearing and General Counsel Embrey advised that they do not. Director Dower then asked for a clarification of *Specific Capacity Test* and Director Hennings suggested adding the words *Single Well Short-term Pump Test* to clarify the meaning.

On a motion by Director Hunt and a second by Director Hennings the Board voted to adopt the Guidelines for Aquifer Testing and Hydrogeological Reports as amended at this meeting – 6 Ayes to 0 Nays

A copy of the Guidelines for Aquifer Testing and Hydrogeological Reports is attached as Exhibit C

Mr. Holland then briefly reviewed the status of the remaining Rule-Related Documents including:

- User Conservation Plans
- Drought Contingency Plans
- Groundwater Protection Plans
- Well Construction Standards

7. Discuss and possibly act on matters related to District Bylaws

General Counsel Embrey reviewed proposed changes to the District Bylaws presented in a marked-up copy of the Bylaws.

A copy of the SWTCGCD Bylaws marked-up with the proposed revisions is attached as Exhibit D

On a motion by Director Hunt and a second by Director Davis the Board approved the proposed revisions to the District Bylaws – 6 Ayes to 0 Nays

8. Discuss, and possibly act on matters related to the funding from Travis County

Director Scadden advised that the last invoice for 2020 was submitted to Travis County last week in the amount of $15,970.74. The invoice has been OK'd by Vicky Kennedy and sent on for processing and approval by the Commissioner's Court.

Director Scadden then explained that Travis County will modify the existing Interlocal Agreement (ILA) to incorporate the remaining $35,000 from the old ILA plus a new $150,000 ($100K for GCD expenses and $50K for groundwater research studies). Vicky Kennedy told him that any expenses between November 3, 2020 and approval of the new ILA can't be invoiced until the new ILA is approved, and there is no draft of the new ILA yet.

9. Discuss and possibly act on matters related to hiring a Bookkeeping company

Directors Davis and Van Ackeren said that they had received the names of three bookkeepers from the audit firm Armstrong, Vaughn & Associates but they had not spoken to any of them yet. Director Urie said that he was OK with a delay in finding a bookkeeper and that audits may not be required for budgets less than $250K after February 15th. General Counsel Embrey advised that Chapter 36 requires annual audits regardless of budgeted amount. Director Van Ackeren asked if there was a deadline for these audits and General Counsel Embrey replied that there is no specific date.

10. Discuss and possibly act on election of Board Officers

Director Scadden opened the discussion stating that he felt it was time for him to step down as Board President and asked if there was anyone who would volunteer to serve as President. Director Davis opined that as Vice President she is the logical next in line, but she expressed concern about the many unknowns facing the District. Director Hunt asked Director Scadden is he would consider waiting one more year to step down. Director Dower said he seconded that idea. Director Scadden then asked the Board if it was their will to have a full time General Manager because most of that

takes his time is to unburden the part time General Manager and a full time GM is necessary to provide relief to the President. Directors Hunt, Davis, Hennings, and Dower said they agreed. Director Scadden said he understood the desire for continuity.

On a motion by Director Hennings and a second by Director Dower the Board voted to continue with the current slate of officers for the next year – 6 Ayes to 0 Nays

The District Officers are:
Richard Scadden, President
Tricia Davis, Vice President
Tim Van Ackeren, Secretary
Jim Urie, Treasurer

11. Discuss and possibly act on agenda items for future Board meetings

- None Identified

12. Discuss and possibly act on setting the date, time, and location for next Board meeting

Special Board meeting on November 16, 2020 at 10:00 AM, remote access only
Regular Board meeting on December 9, 2020 at 10:00 AM, remote access only

13. Adjourn

On a motion by Director Dower and a second by Director Van Ackeren, the Board voted to adjourn the meeting – 6 Ayes to 0 Nays. The meeting was adjourned at 12:59 PM.

PASSED, APPROVED AND ADOPTED THIS 13th day of January 2021.

Tim Van Ackeren, Secretary

SOUTHWESTERN TRAVIS COUNTY
GROUNDWATER CONSERVATION DISTRICT

Exhibit A

October Financial Report

SW Travis Cty. Groundwater Conservation Dist.
Reconciliation Detail
Independent Bank, Period Ending 10/30/2020

Type	Date	Num	Name	Clr	Amount	Balance
Beginning Balance						1,862.05
Cleared Transactions						
Checks and Payments - 6 items						
Bill Pmt -Check	10/14/2020	139	Sawin Group	X	-9,000.00	-9,000.00
Bill Pmt -Check	10/14/2020	142	Lloyd Gosselink	X	-8,952.00	-17,952.00
Bill Pmt -Check	10/14/2020	141	Texas Municipal ...	X	-838.70	-18,790.70
Bill Pmt -Check	10/14/2020	140	Victor O. Schinne...	X	-280.00	-19,070.70
Bill Pmt -Check	10/20/2020	100	Spectrum	X	-82.01	-19,152.71
Bill Pmt -Check	10/29/2020	100	GoDaddy	X	-842.73	-19,995.44
Total Checks and Payments					-19,995.44	-19,995.44
Deposits and Credits - 4 items						
Deposit	10/14/2020		Travis - County	X	18,660.86	18,660.86
Deposit	10/29/2020		Richard Scadden	X	3,000.00	21,660.86
Deposit	10/29/2020		Tim Van Ackeren	X	3,000.00	24,660.86
Deposit	10/30/2020			X	0.19	24,661.05
Total Deposits and Credits					24,661.05	24,661.05
Total Cleared Transactions					4,665.61	4,665.61
Cleared Balance					4,665.61	6,527.66
Register Balance as of 10/30/2020					4,665.61	6,527.66
Ending Balance					**4,665.61**	**6,527.66**

Independent Bank
3090 Craig Drive
PO Box 3035
McKinney, TX 75070

ACCOUNT NUMBER	xxx3546
STATEMENT DATE	10/30/20
PAGE	1 of 4

0004998 6193INDP 26703C00X.006

*0004998 S3
SOUTHWESTERN TRAVIS CO GROUNDWATER CONS
PO BOX 340595
LAKEWAY TX 78734-0010

PUBLIC FUND NOW ACCT

Account Number	xxx3546	Statement Dates	10/01/20	thru	11/01/20
Previous Stmt Balance	1,862.05	Days in Statement Period			32
Deposits/Credits	24,660.86	Average Collected			4,733.26
Checks/Debits	19,995.44	Average Ledger			4,733.26
Service Charge	0.00	Interest Earned			0.20
Interest Paid	0.19	Annual Percentage Yield Earned			0.05 %
Current Stmt Balance	6,527.66	2020 Interest Paid			2.63

DEPOSITS AND OTHER CREDITS

Date	Description	Amount
10/14	XXXXXXXXXX TRAVIS COUNTY 1746000195 20/10/14 ID #- 000001000025642 SW TRAVIS CO GROUNDWAT	18,660.86
10/29	REGULAR DEPOSIT	6,000.00
10/31	Interest Deposit	0.19

OTHER DEBITS

Date	Description	Amount
10/20	SPECTRUM DBT CRD 1949 10/19/20 569004 855-707-7328 TX Card# 8345	82.01-
10/29	DNH*GODADDY.COM DBT CRD 0129 10/29/20 123307 480-5058855 AZ Card# 8345	842.73-

ACCOUNT NUMBER	xxx3546
STATEMENT DATE	10/30/20
PAGE	3 of 4

SOUTHWESTERN TRAVIS CO GROUNDWATER CONS
PO BOX 340595
LAKEWAY TX 78734-0010

0004998 6193INDP 26705C00X.006 26FDP -----

CHECKS IN NUMBER ORDER

Listed in numerical order

Date	Check	Amount	Date	Check	Amount
10/16	139	9,000.00	10/21	141	838.70
10/23	140	280.00	10/20	142	8,952.00

(*) indicates gap in sequence

DAILY BALANCE SUMMARY

Date	Balance	Date	Balance	Date	Balance
10/01	1,862.05	10/20	2,488.90	10/29	6,527.47
10/14	20,522.91	10/21	1,650.20	10/31	6,527.66
10/16	11,522.91	10/23	1,370.20		

Independent Bank **CHECKING DEPOSIT**

Date 10-29-20
Name See Southwestern
Address
ACCOUNT NUMBER TRAN CODE
1000943546

CASH
SUB TOTAL
LESS CASH RECEIVED
NET DEPOSIT $ 6000.00

DOCUMENT Drawer:33405 10/29/20
Trans# 20 15:37:20
DDA Deposit 6000.00

⑆500100810⑆ 1000943546⑈ 600000

Deposit Amount $6,000.00 Date 10/29/2020

SOUTHWESTERN TRAVIS CO GROUNDWATER CONS
PO BOX 340595
LAKEWAY, TX 78734

DATE 10-14-20 0139

PAY TO THE ORDER OF Sawin Group $9000.00
Nine thousand and 00/100 DOLLARS

Independent Bank
MEMO 12-13-14 1206

⑆111916326⑆ 1000943546⑈ 0139

Check 139 Amount $9,000.00 Date 10/16/2020

SOUTHWESTERN TRAVIS CO GROUNDWATER CONS
PO BOX 340595
LAKEWAY, TX 78734

DATE 10-14-20 0140

PAY TO THE ORDER OF Victor O Schinnerer & Co. Inc. $ 280.00
Two hundred eighty and 00/100 DOLLARS

Independent Bank
MEMO S 1873950

⑆111916326⑆ 1000943546⑈ 0140

Check 140 Amount $280.00 Date 10/23/2020

SOUTHWESTERN TRAVIS CO GROUNDWATER CONS
PO BOX 340595
LAKEWAY, TX 78734

DATE 10-14-20 0141

PAY TO THE ORDER OF TML Intergovernmental Risk Pool $ 838.70
Eight hundred thirty-eight & 70/100 DOLLARS

Independent Bank
MEMO 3066

⑆111916326⑆ 1000943546⑈ 0141

Check 141 Amount $838.70 Date 10/21/2020

SOUTHWESTERN TRAVIS CO GROUNDWATER CONS
PO BOX 340595
LAKEWAY, TX 78734

DATE 10-14-20 0142

PAY TO THE ORDER OF Lloyd Gosselink $8952.00
Eight-nine hundred fifty-two & 00/100 DOLLARS

Independent Bank 3947-1 5481.00 3471.00
MEMO 97513733-97514618

⑆111916326⑆ 1000943546⑈ 0142

Check 142 Amount $8,952.00 Date 10/20/2020

0004998 6193INDP 26707C00X.006 26FDP

SOUTHWESTERN TRAVIS COUNTY
GROUNDWATER CONSERVATION DISTRICT

Exhibit B

Rule-Related Documents in Development

Rule-Related Documents in Development

Document	Document Status	Applicability	Likely Promulgation	Comments
All application forms (in addition to registration)	Final Complete; posted on website	Existing wells requiring permit; All new wells	Now	Forms will be amended as use indicates and as Board amends Rules if/as needed
Guidelines for Aquifer Tests and Hydrogeologic Reports	Board review underway	All wells requiring permit	Later in November 2020	Only new NDU wells, but new and existing wells under OP
User Conservation Plan Template (for OPs)	Board Committee review underway	All wells requiring Operating Permit	December, 2020	Required for admin complete OP app.
User Drought Contingency Plan Template (for OPs)	Board Committee review underway	All wells requiring Operating Permit	December, 2020	Required for admin complete OP app.
Groundwater Protection Plan (for NDU GPs)	Board Committee review underway	All wells requiring NDU General Permit	December, 2020	Required for admin complete NDU General Permit app.
Well Construction Standards and Manual	Not yet started	All new wells	February, 2021	Rules are fairly specific and may be used in interim along with TDLR rules

SOUTHWESTERN TRAVIS COUNTY
GROUNDWATER CONSERVATION DISTRICT

Exhibit C

Guidelines for Aquifer Testing and Hydrogeological Reports

Guidelines for Aquifer Testing and Hydrogeologic Reports

Southwestern Travis County Groundwater Conservation District
Travis County, Texas

Adopted by Board – xxxxxxx xx, 2020

SWTCGCD Board of Directors

Richard Scadden, President
Tricia Davis, Vice President
Tim Van Ackeren, Secretary
Jim Urie, Treasurer
Jim Dower, Director
Juli Hennings, Director
Brian Hunt, Director

General Manager

Kodi Sawin
GeneralManager@swtcgcd.org

Southwestern Travis County Groundwater Conservation District
8656 Highway 71 West
Building A, Suite 224
Austin, TX 78735
512-276-2875

Website: www.swtcgcd.org

1.0 Basis and Applicability of These Guidelines

District Rule 3.4(A)(4) requires an applicant for a) a new Operating Permit for either a previously installed well or a proposed new well, b) certain alterations to a previously installed well, and/or c) certain amendments to an existing Operating Permit to conduct, analyze, and report to the District the results of prescribed aquifer tests in a technical report with prescribed content. The Report must address the potential hydrogeological impacts associated with the proposed groundwater production and is a required component of administratively complete applications for such requested authorizations.

The guidelines in this document describe how the aquifer tests must be conducted, how the test results are to be analyzed, and how the hydrogeologic information is to be reported. This document is complementary to the Well Drilling Authorization/Modification, and Operating Permit applications. The content of this document is therefore regulatory in nature and should be considered by applicants as required for an administratively complete application unless specifically modified in writing by the District General Manager. This guidance is provided primarily to assist applicants comply with the intent of District Rules and if any differences between the provisions of this document and the District Rules are perceived or imputed, the Rules shall take precedence.

Under current Rules, all those wells, whether "Existing Wells" or "New Wells" as defined by District Rules, that are or may be required by the District to obtain an Operating Permit from the District are required to conduct aquifer tests and prepare hydrogeologic reports. For wells that are to be authorized under Non-exempt Domestic Use General Permits by Rule, only proposed "New Wells" are required to perform aquifer testing and even so only to a limited extent, as described in Section 2.1, Tier 1 Wells. Exempt wells, whether "Existing Wells" or "New Wells", are not subject to this guidance and are not required to perform and report aquifer tests for regulatory purposes.

This version of the Guidelines document is the initial version and takes effect upon adoption by the District Board. Its requirements are applicable until the document or its applicability is subsequently amended by Board action. As the District learns more about the hydrogeologic characteristics of the District's aquifers and how its groundwater resources are utilized, it should be expected that these guidelines will be amended to cost-effectively manage those resources.

2.0 Scope of Aquifer Testing and Hydrogeologic Reporting

Hydrogeologic studies provide essential baseline information for water-resource management for both the District and the permittee. Aquifer tests are a key component of hydrogeologic studies, however as Butler (2009) states, "an assessment of the response of an aquifer to pumping over the long term should not solely depend on information from a pumping test of

limited duration; one must use other information on the regional hydrogeology, and so forth, to make that determination." The overall goal of these requirements is to provide data and estimates of aquifer properties, water levels, water chemistry, and analysis of impacts of a well, especially larger wells, in the given hydrogeologic setting.

To achieve this goal, the aquifer test must be performed on previously installed or test wells located or drilled on the property in question and in the proposed aquifer production zone, and it must be conducted and reported in accordance with hydrogeological testing procedures specified by or acceptable to the District. It is a requirement that the applicant and its technical representatives coordinate with the District and its technical representatives to ensure both local site-specific and regional information is considered in developing and approving the testing and reporting.

The District has established tiered requirements for aquifer tests and their associated reports, based on both the scale of prospective groundwater production to be permitted under an Operating Permit and whether the well to be permitted is an "Existing Well" or a proposed "New Well". These tiers are summarized in the table below:

Tier	Aquifer Test and Report Requirements	"Existing Wells" That Are Required to Seek Operating Permit	Proposed "New Wells" That Are Required to Seek Authorization to Operate at Volume Indicated
1	Abbreviated ("Specific Capacity") Test and Report	Required of all "Existing Wells" seeking an Operating Permit, regardless of size.	<1,000,000 gallons per year under Operating Permit
2	Aquifer Test and Hydrogeologic Report; may require installation of new monitor wells if existing wells are not available or are inadequate for monitoring.	As a permit condition, may be required in future if a well with an Operating Permit at >1 MGY is suspected of causing unreasonable impact.	≥1,000,000 to 10,000,000 gallons per year under Operating Permit
3	Aquifer Test and Hydrogeologic Report; will require monitoring well network plan and installation of one or more new monitor wells as observation wells.	See Tier 2 above.	≥10,000,000 gallons per year under Operating Permit

The appropriate tier is determined solely by the District and will be assigned using information in the well registration, the Well Drilling/Modification Authorization application, and/or Operating Permit application, following initial consultation with the permit applicant. The production thresholds between tiers shown in the table are presumptive but not absolute; the trigger values between tiers may be higher or lower depending upon the hydrogeologic setting and the level or risk of unreasonable impacts that may be incurred by well operation, as determined by professional judgment of District staff.

The assigned tier determines what the applicant must include in its aquifer test plan and the depth and breadth of information contained in the Hydrogeologic Report. Each of the tiers is characterized in the subsections below, along with a variance request procedure.

2.1 Tier 1 Wells

The lowest tier pertains to: all Operating Permits sought for "Existing Wells", regardless of amount of groundwater production to be permitted; to proposed "New Wells" seeking a Non-exempt Domestic Use General Permit by Rule; and also to relatively small, proposed "New Wells" that seek to permit less than 1 million gallons (MG) per year under an Operating Permit. Tier 1 Permits may be authorized to employ an abbreviated aquifer test using a single well, that is, the well to be permitted, which is also known as a "specific capacity test". In addition, previously conducted successful specific-capacity tests performed for a pre-existing Tier 1 well may be used in lieu of conducting a new test on that well, and Hydrogeologic Reports based on new aquifer tests conducted at an "Existing Well" may be submitted up to six months after the date the well is permitted.

Tier 1 wells, regardless of permit type, also may use a short-form template to report findings and conclusions of the abbreviated aquifer tests, in lieu of the full Hydrogeologic Report that is required for Tier 2 and 3 wells. This template is designed so that it may be completed by the well driller, pump installer, or even the well owner rather than requiring a technical consultant. Access to the Tier 1 report template will be provided to the applicant or well driller/pump installer at the initial consultation meeting with the District representatives.

The purpose of the Tier 1 Tests and Reports is to establish baseline information of the well and aquifer (yield, parameters, water quality). The Tier 1 tests and Reports are primarily intended for those wells that pump a relatively small volume and have a low risk for unreasonable impacts. Key elements of the Tier 1 Abbreviated Aquifer Test and Report include:

a. **Estimated aquifer properties:** Transmissivity needs to be calculated from an aquifer test using the standards outlined in these guidelines. Typically, these will be single-well (specific capacity) tests, however monitoring of nearby wells may be required if existing wells are readily accessible and adequate for monitoring. Storativity should be calculated if sufficient monitor well response is measured.

b. **Estimated extent and magnitude of well interference:** The report should address the short- and long-term impacts from the anticipated pumping on existing surrounding water wells. This can be done with simple distance-drawdown graphs (e.g. Cooper-Jacob) that project the effects of at least seven years of pumping.

c. **Water quality:** The report should document and establish water chemistry of the groundwater produced at the end of the test, which at a minimum includes field parameters (conductivity, temperature, pH) and, as warranted by the hydrogeologic setting, possibly laboratory results (major ions and anions, and common nutrients).

An existing well that has been operating for an extended time generally indicates that there has not been an unreasonable impact from its operation. However, if the proposed operation of a Tier 1 well under an Operating Permit is different than that previously practiced at the well, or if new data suggests that adverse impacts are or may be attributable to operating that particular well, or if complaints of adjacent well owners are received by the District indicating that a previously installed well is causing extraordinary and/or unanticipated groundwater problems, the District may require the owner/operator of that well to undertake the aquifer testing and reporting described under a higher tier than that indicated by the permitted volume to elucidate the magnitude and scope of problems caused in the groundwater system.

2.2 Tier 2 and Tier 3 Wells

Tests and Reports for Tier 2 and Tier 3 wells are intended for those well systems that have proposed pumping volumes greater than 1 MG per year, with Tier 2 wells having annual permitted amounts between 1 and 10 MG, and Tier 3 wells having annual permitted amounts greater than 10 MG. For both tiers, the purpose of the aquifer testing and reporting is the same: to make an assessment of the short- and long-term potential for unreasonable impacts to the regional aquifer system and existing surrounding water wells from the proposed pumping. An aquifer test is a key part of that evaluation, but other relevant hydrogeologic data, as described above, may also be evaluated, if available. Geophysical logging following drilling of proposed wells that are either Tier 2 or 3 is required as part of this evaluation, and the suite of logs to be run ~~(e.g., gamma ray log, a temperature log, an electric self-potential log, or a caliper log)~~ will vary with the hydrogeologic setting of the well and will be determined in consultation with the District before the well is authorized to be installed; a gamma ray log, a resistivity log, and a caliper log are typically recommended, and a temperature log, an electric self-potential log, and possibly other logs may also be useful. Similarly, as a special provision for authorizing well drilling at certain locations, the District may require the collection of drill cuttings at ten-foot or twenty-foot intervals by the drilling contractor, upon timely request of the District, for inspection by the District's own geologist/consultant.

These two tiers are differentiated primarily because of the scale of their potential impacts, and the need to determine the magnitude and geographic area affected by those impacts as precisely as possible for the larger wells. This requires the use of a monitoring well network for

all Tier 3 wells, which mandates the development of a District-approved monitoring well network plan and generally the installation of new monitor wells for the aquifer test. Tier 2 testing will require the installation of new monitor wells only if existing wells in the study area are not available or are inadequate for monitoring. In contrast, Tier 3 testing requires a monitoring well network to be established in the prospective aquifer management zone by the installation of at least one or more new monitor wells for a test and identifying a sufficient amount of existing wells adjacent to the well or well field. A second monitor well may be required to measure the effects in different aquifers or in different locations of a widespread wellfield. The Tier 3 testing requirements are intended to ensure the best possible test and data collected for these larger permit requests.

The new monitor wells shall serve as a component of the "monitoring well network plan" submitted with the aquifer test work plan as required by the Rules. At a minimum, the monitoring network plan should use narrative, figures, and tables to address in summary fashion the purpose of the network, the network's design and construction details, monitoring well specifications including completion schedule, and details on the procedures and responsibilities for assuring oversight, maintenance, and continuing access. The monitoring well network plan must be approved by the District and the monitoring wells shall be installed and/or identified prior to the commencement of the aquifer test.

Key elements of the Tier 2 and 3 Hydrogeologic Test and Report include:

1. **Estimated aquifer properties:** Hydrogeologic parameters including *transmissivity* and *storativity* need to be calculated from an aquifer test using appropriate published analytical models. Additionally, the Report should also identify the presence of boundary conditions such as barriers to groundwater flow, recharge, and other factors inherent to the aquifer or hydrologic conditions that may influence pumping over time.

2. **Estimated extent and magnitude of interference:** The Report should address the short and long-term impacts from the pumping on existing surrounding water wells. The Report should contain a map of the maximum measured drawdown from the aquifer test for the surrounding monitored wells. In addition, projected future drawdown from analytical models shall be done for at least seven years. Results will be used to evaluate the potential for unreasonable impacts to existing surrounding water wells.

3. **Water quality:** The Report should document water chemistry and detectable trends during the aquifer testing. The Report should discuss the risk of water quality changes due to pumping. At locations where significant inter-aquifer flow could induce waters of differing and distinguishable water quality, further evaluations may be required. Results will be used to evaluate the potential for unreasonable impacts to the quality of water in existing surrounding water wells or the aquifer.

4. **Estimated impacts to regional water resources:** Regional water resources include

aquifers, springs, and surface streams. The Report should attempt to quantify the short- and long-term impacts from the pumping on these water resources and on the Desired Future Conditions (DFCs) for the relevant aquifer(s). Results will be used to evaluate the potential for unreasonable impact to DFCs, regional aquifer conditions, springflows, or base flows to surface streams.

2.3 Use of Alternative Specifications of Hydrogeologic Reports and Aquifer Test

The District may consider alternatives to certain requirements of these *Guidelines.* Technical information and a memorandum from a Texas licensed professional geoscientist or engineer supporting and documenting the rationale for using an alternative specification shall be submitted to the General Manger for consideration. Factors that may be considered include:

a. Relatively low requested production volume;
b. Sufficient data exist for the well or vicinity (e.g. existing hydrogeologic reports or aquifer tests);
c. Low potential for unreasonable impacts; and
d. Other specified relevant factors.

To accommodate these factors, deviations from the specifications in these *Guidelines* is possible but only with approval from the District's General Manager, which should be noted and described in the submitted work plan.

3.0 Aquifer Test Work Plan

Aquifer Test is defined in District Rule 2 as:

> *… a controlled field experiment used to estimate hydraulic properties of aquifer systems (transmissivity and storativity). The primary method is called a "pumping test" in which a well extracts or injects water at a controlled rate while water levels are measured in one or more surrounding wells. Guidelines and procedures for Aquifer Tests are outlined in the District's guidance document, Guidelines for [Aquifer Testing and Hydrogeologic Reports] ("*Guidelines*").*

Aquifer test design and operation should generally follow those discussed in Driscoll (1986) or other published resources. The work plan should briefly address each of the key aspects outlined in **Appendix A**, Guidance for Developing Aquifer Test Work Plans.

The aquifer test work plan shall be prepared prior to conducting an aquifer test. Results of the aquifer test will be included in the Hydrogeologic Report. Both the aquifer test work plan and Report need to be prepared by a Texas licensed professional geoscientist or engineer. Planning

and implementation of the aquifer test shall be closely coordinated with the District to ensure that the proposed report is consistent with District standards and expectations specified in these guidelines. Special attention should be given to the proper management of produced water during the test, such that it is used beneficially to the maximum feasible extent and it does not adversely affect local waterways and adjacent property. Prior to the commencement of the aquifer test, the applicant (or applicant's designated representative) shall have a meeting to discuss the proposed aquifer test work plan that shall be prepared pursuant to the guidance in **Appendix A**. A written aquifer test work plan shall be submitted to the General Manager for review and approval prior to commencement of the test and shall include the required information for aquifer test work plans as specified in these guidelines. Once approved by the District, the aquifer test shall be conducted and the Report completed pursuant to the approved work plan and these guidelines. The applicant is responsible for all costs associated with the aquifer test.

The aquifer test plan must be approved by District staff prior to commencement of the test but after a pre-test consultation with the District. These guidelines will be used as a checklist during the pre-test meeting with the applicant or their consultant. For an aquifer test of a prospective new well or major modification of an existing well, the aquifer test work plan must be submitted as part of the application for a Well Drilling Authorization, which must be approved before the well is installed. For permitting an existing well, the aquifer test work plan is submitted before making an application for a Production Authorization. In either circumstance, once approved by the District, the aquifer test must be conducted according to the approved plan, and the Hydrogeologic Report based on the approved aquifer test is submitted as part of the Production Authorization application.

4.0 Content of Hydrogeologic Report

The Hydrogeologic Report is defined in District Rule 2 as:

> *a report, prepared by a Texas licensed geoscientist or a Texas licensed engineer, in accordance with the District's guidance document Guidelines for [Aquifer Testing and Hydrogeologic Reports] (*Guidelines*). The report documents, describes, and interprets the results of an Aquifer Test with other information to evaluate the availability of groundwater in a study area and target formation. The primary goal is to assesses the response of an aquifer to pumping over time and the potential for unreasonable impacts.*

The Hydrogeologic Report shall provide findings and conclusions addressing the response of an aquifer to pumping over time and the potential for causing unreasonable impacts. Applicants may not rely *solely* on reports previously filed with or prepared by the District. Material, purposeful deviation from the guidance in this section of the *Guidelines* document may occur only upon prior written request providing justification by the applicant or its technical

representative and only with prior District approval (refer to Section 2.3, above, for more information on the procedure for using alternative specifications).

The District's staff will evaluate the application with the benefit of the Hydrogeologic Report to determine whether there is potential for Unreasonable Impacts (as defined by District Rule 2) and produce a written report of findings if unreasonable impacts are considered likely and as justification for staff recommendation concerning the permit issuance. The evaluation of the potential for unreasonable impacts will apply the best available science and be performed on the basis of the Report, the aquifer test, and other factors relevant to the proposed production from the subject well/well field including but not limited to:

a. local geology and aquifer conditions including water quality;
b. construction and location of the subject well/well field;
c. target production zone, production capacity, and proposed production rate of the subject well/well field;
d. construction/completion of existing wells in the area of influence;
e. drawdown over time and distance attributed to pumping from the subject well/well field;
f. drawdown attributed to drought conditions and seasonal increases in pumping from existing wells;
g. drawdown attributed to pumping from existing wells and from future domestic and livestock wells;
h. proposed production relative to the Modeled Available Groundwater;
i. projected impacts on the relevant Desired Future Condition(s); and
j. projected impacts to regional surface water resources (springs and streams).

Permit applications may be deemed incomplete due to Reports that do not meet the District's minimum standards or deviate significantly from these guidelines without prior District approval. An applicant who incurs costs related to conducting an aquifer test knowingly bears the risk that the permit request may be denied or modified.

While the applicant's technical consultant should use his or her best professional judgment as to how best ~~to~~ present requisite information in a responsive report, the balance of this section is a suggested outline of topics, tables, and figures that should be addressed in the Tier 2 and 3 Hydrogeologic Report (Report), along with ~~. Tier 1-3 Reports should address~~ their respective topics described in Section 2.2 and 2.3 above. ~~(However, the~~ Tier 1 reporting is accomplished simply by completing the short-form Abbreviated Hydrogeologic Report template described in Section 2.1 above ~~is, by its nature, a more concise document and does not address all the elements outlined below.)~~

A. Summary, Results and Conclusions

i) Description of the type of permit request, aquifer (target production zone), use type, volume, and other relevant factors.

ii) Conclusions of the Report as they relate to the purpose described in Section 2.

B. Description of the Pumping Well Site and Water System

i) Description and map of the project area, the location of the well site(s), and system configuration including the location and volume of water-storage facilities.
   - Figure*: sketch (map) of the test site*
     - *Note*: *Describe and map potential interference from nearby pumping wells.*

ii) Description of the current and anticipated annual pumping demands, including typical pumping schedules such as frequency, duration, peak demand hours, and pumping rates of the pumped well(s).

C. Hydrogeology and Conceptual Model (Tiers 2 and 3 only, except where indicated)

The data sources for this section should be the best available information, properly cited from the literature, and integrated with the data collected from this study.

i) Provide a description of the hydrogeologic conceptual model of the aquifer and well site. Discuss or provide:
   - Relevant hydrogeologic aspects of the aquifer such as aquifer conditions (e.g. confined, semi-confined, unconfined), hydrostratigraphy, faulting, and boundary conditions (recharge or barriers).
   - Map of wells (exempt and nonexempt), surface ponds or reservoirs, major karst features, springs, or any other source of recharge and discharge for the project well site and surrounding area of influence. Data sources should include all publicly available databases coupled with field reconnaissance or survey investigations.
   - Regional hydrogeologic elements such as recharge, flow, and discharge should be addressed in the conceptual model. Concepts such as pumping equilibrium, changes in storage, and capture related to pumping should be discussed.
   - *Figures: Regional and local scale geologic and potentiometric maps*
   - *Figures: Study area geologic and hydrogeologic cross sections*
     - The role of karst and fracturing and faulting in the conceptual model should also be directly discussed in addition to the heterogeneity and anisotropy of the aquifer and well field.

ii) Detailed well hydrostratigraphy and completion/construction information need to be presented in the Report. This should include geophysical logs of the pumping wells (required), and monitor wells (required for all wells used in a Tier 3 monitoring well network plan). Geophysical logs should include gamma ray, resistivity, and caliper logs.
   - *Figures: Pumping and monitor well hydrostratigraphy and well completion diagrams.*
     - Well inventories, drilling and geophysical logs, pump depths, casing/annular seal specs, state well reports, and other relevant records should be included in the appendices of the Report.

- Electronic files (.PDF and/or .WCL) of geophysical logs should be made available. ~~Geophysical logs should include gamma ray, resistivity, and caliper.~~

iii) Potentiometric maps should be prepared showing the elevations of the potentiometric surface(s) of the aquifer(s) proposed for usage or that could be impacted.

- Regional potentiometric maps can be based on existing or published data, while more local potentiometric maps should be based on water-level measurements taken prior to the aquifer test for the tested aquifer and, to the extent possible, all relevant aquifers that could be subject to capture.

▪ *Figure: Regional and local potentiometric maps*

D. Aquifer Test Work Plan and Results

i) Aquifer Test Work Plan. Summarize the aquifer test design and operation outlined in **Appendix A** and approved by the District.

- *Note: Complete time-discharge records of the pumped well and water-level records of the pumped and monitor wells should be put into an appendix (and provided in digital format).*

ii) Aquifer Test Results. Discuss pre-test trends and water levels during the pumping and recovery phases as they might relate to influences from recharge, barometric effects, and pumping wells. Any problems or inconsistencies with pumping rates or measurements must be discussed and documented.

▪ *Figure: Map of the maximum measured drawdown during aquifer test. If more than one well is pumped, the sum of the maximum drawdown from each test must be presented. Maximum drawdown determinations may need to be adjusted for regional water-level trends.*

▪ *Figures: Annotated hydrographs (arithmetic or non-log) water-level elevations versus time for all the data from each well.*

▪ *Figures: Hydrographs of nearest stream flow, springflow, and rainfall station data covering a period of three months prior to the aquifer test through the recovery period.*

E. Analyses of Aquifer Test Data and Parameter Estimation

i) This section should describe the methods used and analytical model selected to estimate aquifer parameters.

- All data manipulation (trend-correction) should be clearly described.

▪ *Table: Summary of input parameters used in the analytical solutions (pumping rate, aquifer thickness, distances, well construction details, etc.).*

▪ *Figures: Annotated semi-log and log-log graphs of measured drawdown versus time in pumping and monitor wells. Include select theoretical curves (analytical models) used to calculate the parameters.*

- *Methods should include straight-line (Cooper and Jacobs, 1946) and type curve models such as Theis (1935) or other analytical models. If numerous plots are generated, they can be put into an appendix.*

ii) Storativity should only be calculated from monitor well (not pumping well) data.

Data from monitor wells farthest out generally result in the best estimates of storativity (Butler and Duffield, 2015; Butler, 2009).

iii) Deviations from these theoretical curves must be discussed and may include effects from: hydraulic boundaries (recharge and no flow), partial penetration, fluctuating pumping rate, delayed yield, leakage, atmospheric responses, regional water-level trends, and interference from other wells.

- *Table: Summary table of estimated aquifer parameters and methods. This should provide a range of results based on various selected methods. The preferred or averaged result and model should be indicated. A comparison to other published or nearby aquifer test values should be included.*

F. **Potential Unreasonable Impacts Analysis** (Tiers 2 and 3 only, except where indicated)

The effects of pumpage on wells and on the aquifer must be evaluated and discussed in this section as they relate to the potential for unreasonable impacts. Aquifer parameters selected for the evaluation should be representative of the potentially impacted area. Discuss the rationale of the parameters selected for the analyses.

Well interference (Tiers 1-3)

i) Discuss and map the estimated extent (area of influence) and magnitude of well interference on existing surrounding wells.

ii) Discuss and consider construction and location of the subject well/well field; target production zone, production capacity, and proposed production rate of the subject well/well field; construction/completion of existing wells in the area of influence; drawdown attributed to drought conditions and seasonal increases in pumping from existing wells; and drawdown attributed to pumping from existing wells and from future domestic and livestock well.

- *Figure: A plan view map of theoretical maximum drawdown for at least seven years shall be shown on the final maps and cross sections.*
- *Figure: Chart showing the forecast of distance-drawdown from the pumping well for one week, one year, and seven years. Cooper-Jacob plots are recommended.*
- *Figure: Hydrogeologic cross section (showing geologic formations and well completions, etc.) showing theoretical drawdown for at least seven years.*

Impacts to regional water resources

i) Discuss the requested production volume in context with the Modeled Available Groundwater (MAG) and the DFC.

ii) Discuss potential short- and long-term impacts from the pumping on freshwater resources including springs and baseflow to surface streams.

iii) Discuss regional numerical or other analytical models and results relevant to the permit.

Changes in water quality

i) Document and discuss any water-quality changes that may have occurred due to pumping during the test.

- Analytical results from the laboratory should be provided as appendices.
- *Table: Summary of laboratory water-chemistry results. Should include comparison to EPA and TCEQ standards, in addition to other regional averages.*
- *Figure: Plots showing water level, temperature, and conductivity during test.*

G. Supplemental Information

Due to the test-specific nature of these investigations, additional information can enhance the results and evaluation of the data. Below are some items that could be considered within the scope of work for the hydrogeologic studies and report:

- *Numerical modeling*
- *Dye tracing*
- *Surface geophysics*
- *Down-hole camera surveys*
- *Other reports or unpublished information or data.*

5.0 Select References

These references are taken from similar guideline documentation on aquifer tests and hydrogeological reports prepared by the Barton Springs/Edwards Aquifer Conservation District.

Alley, William M., 2009, Update on Guidance for the Preparation, Approval, and Archiving of Aquifer-Test Results. U S Geological Survey, Office of Groundwater Technical Memorandum 2009.01 <https://water.usgs.gov/admin/memo/GW/gw09.01.html>

Butler, J., 2009, Pumping Tests for Aquifer Evaluation—Time for a Change? Groundwater, Volume 47, Issue 5, September/October 2009, Pages: 615–617.

Butler, J. and G. Duffield, 2015, Aquifer Testing for Improved Hydrogeologic Site Characterization featuring AQTESOLV and the In-Situ Level TROLL, Course Notes, D. Kelleher (ed), Fort Collins, Colorado, October 27 and 28, 2015, 511 pages.

Cooper, H.H. and C.E. Jacob, 1946, A generalized graphical method for evaluating formation constants and summarizing well field history. Am. Geophys. Union Trans. Vol. 27, pp. 526-534.

Driscoll, F.R., 1986, Groundwater and Wells. Second Edition. Johnson Screens, St. Paul, Minnesota. Pp. 1089.

Hunt, B.B., B.A. Smith, J. Kromann, D. Wierman, and J. Mikels, 2010, Compilation of Pumping Tests in Travis and Hays Counties, Central Texas: Barton Springs Edwards

Aquifer Conservation District Data Series report 2010-0701, 12 p. + appendices <http://www.bseacd.org/uploads/BSEACD_DS_2010-0701.pdf>

Kruseman, G.P., and N.A. de Ridder, 1991, Analysis and Evaluation of Pump Test Data, Second Edition, ILRI, Netherlands. Pp. 377

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage. Trans. Amer. Geophys. Union, Vol. 16, pp. 519-524.

Appendix A Guidance for Developing Aquifer Test Work Plans

The District suggests the following content and possible structure for Aquifer Test Work Plans.

1. Initiation, Duration and Pumping Rate

a) Aquifer tests for most aquifers should not be conducted during or immediately after significant rain or recharge events, because of the rapid change in water levels that often follows.
   - *Note: aquifer tests may occur during recharge events for deeply confined aquifers if the pre- and post-test data are sufficient to document trends.*

b) Testing schedules should be coordinated with other area pumping wells to avoid interferences that could result in misleading or uncertain results.

c) The test shall be designed to pump a minimum of three times the daily equivalent of the requested annual permitted volume (see table below). Longer duration pumping tests (four to five times the daily equivalent) are encouraged and could be required where the risk of impacts, or encountering aquifer boundaries, is high.
   - *Note: the duration of the test, rather than the pumping rate, increases the scale of the test (distance of measurable drawdown). The pumping rate has less of an effect on the scale of the test but increases the ability to distinguish water-level fluctuation noise. In addition, unconfined aquifers generally result in slower response and need longer pumping durations for measured responses in monitor wells (Butler and Duffield, 2015). Longer test durations and larger pumping volumes should be considered if it is anticipated the permit would increase sometime in the future, such that the test would not need to be repeated.*

Table - Example duration calculation of aquifer test

Annual Permit Request (gal)	Daily equivalent (gal)	Pumping target volume (gal)	Testing Rate 380 gpm	Testing Rate 285 gpm
100,000,000	274,000	3 x 274,000 = 822,000	36 hour	48 hour

d) The aquifer test should be a constant-rate test. Well testing (step tests) should be performed prior to the aquifer test (allowing for recovery) in order to properly size the pump and estimate the optimal well yield for the test. Well testing should ideally be done prior to the

final work plan.

- *Note: Pumping rates should be measured frequently to verify that a constant discharge rate is being achieved. If a flow meter is used to measure flow, it should be calibrated prior to the test and verified using another calculation method such as an orifice weir, or by the time required to fill a storage vessel of known volume.*

e) Waste of the discharge should be avoided as much as possible, particularly during low water-level conditions in the aquifer and should be routed to storage tanks or to other water systems when possible. If the water must be discharged to surface drainages off-site, the pumped water should be routed so that it does not recharge into the tested aquifer in the vicinity of the pumping or monitor wells during the test. Discharge onto adjoining properties needs to be considered and avoided if possible, especially when it involves flooding and/or poor-quality water. The applicant shall discuss the fate of discharged water in the work plan.

2. Aggregate Well Fields

If the study involves the assessment of two or more pumping wells, each well may be pumped separately to measure their combined effects. If the wells are sufficiently close, it may be possible to pump the wells simultaneously.

3. Well Completion

a) All proposed pumping wells must be completed and equipped for the ultimate planned use or, at minimum, completed and equipped to isolate the target production zone for the ultimate planned use and production rate. Observation wells may be required. The applicant is responsible for all cost associated with the design, engineering, well construction, and other related expenses. The use of test wells must be approved by the District by completing a Production Authorization application and receiving a Test Well General Permit by Rule.

- *Note: If the conversion of the test wells to final production involves significant modifications (well diameter, acidization, etc.), then a special condition of the permit, if granted, may be included to require a re-test of select wells after final completion to demonstrate the data can be reproduced. If the test of wells after final completion results in significant differences in aquifer parameters and measured response to surrounding wells, the full aquifer test may need to be repeated and the permit subject to staff-initiated amendments based on a new aquifer test.*

4. Number and Location of Monitor Wells

a) Monitor wells should be selected radially around the pumping well and include wells completed in the same aquifer.
   - *Provide a detailed map of pumping, monitor, and area wells.*
   - *Use analytical models (Cooper-Jacob) to help forecast distance and potential magnitude of drawdown to monitor wells using published aquifer parameters.*

b) For Tiers 2 and 3, some monitor wells may be selected that are in different aquifers to evaluate the potential for inter-aquifer communication.

c) Ultimately, it may be necessary for the Tier 2 testing, which have a significant risk of unreasonable impacts, to install one or more monitor wells in the absence of existing well-suited monitor wells.

d) For Tier 3, the aquifer test work plan shall also include a monitoring well network that shall be established by installing one or more new monitor wells and identifying a sufficient number of existing wells adjacent to the well or well field prior to the commencement of the aquifer test in accordance with the District- approved monitoring well network plan. The final monitoring well network plan and aquifer test work plan must be approved by the District (Appendix B).

5. Water-Level Data

a) Pre-aquifer test water-level measurements should be collected starting at least one week prior to pumping.

b) Post-test data collection in all wells should continue through the recovery phase, which should be about as long as the pumping phase.
   - *Note: recovery data often results in the best data for parameter estimation as head loss due to well construction is minimized (Butler and Duffield, 2015).*

c) Select monitor wells should be measured beyond the recovery period of the pumping phase to establish regional and local water-level trends and to observe any delayed response to pumping.
   - *Note: It is preferable that recovery lasts two to three times the duration of the pumping for complete recovery and also to measure trends.*

d) All water-level measurements should be within 0.1 feet precision. The use of automated data loggers and vented pressure transducers should be used whenever possible. The automated data should be calibrated/verified with manual e-line measurements if the risk of hanging up the e-line is low.

e) Other means such as airlines or sonic meters, are generally discouraged from use but may be allowed as backup measurements.

f) All water-level data must be submitted in the report and made

available in digital format (spreadsheet).

g) Care should be exercised to prevent (bacterial) contamination of monitor wells.
   - *Note: The District may be able to designate relevant existing monitor wells, and provide logistical support to identify, make introductions, and possibly assist with monitoring if time and resources allow.*

6. Water Quality Data

a) Samples for major ions, nutrients, and other trace elements at the end of the test.
   - *Note: the list of parameters should be provided in the work plan.*

b) Field parameters (temperature, conductivity, pH) should be monitored throughout the test with tabular results provided in the appendices.

SOUTHWESTERN TRAVIS COUNTY
GROUNDWATER CONSERVATION DISTRICT

Exhibit D

SWTCGCD Bylaws marked-up with the proposed revisions

SOUTHWESTERN TRAVIS COUNTY GROUNDWATER CONSERVATION DISTRICT BYLAWS
Approved by SWTCGCD Board on February 12, 2020

SECTION 1. DISTRICT CREATION, PURPOSE & POWERS

1.1. District Creation and Purpose.

The Southwestern Travis County Groundwater Conservation District (District) was created under the authority of Section 59, Article XVI, of the Texas Constitution in accordance with Chapter 36 of the Texas Water Code by Acts of the 85th Legislature in 2017, codified as Chapter 8871, Special District Local Laws Code ("the District Act"), as a governmental agency and a body politic and corporate. The District's boundaries are within the southwestern quarter of Travis County bound to the west by Blanco and Burnet counties, southwest by Hays County, southeast by the northwestern boundary of the Barton Springs/Edwards Aquifer Conservation District (BSEACD) and to the north by the Colorado River (Lake Travis, Lake Austin, and Lady Bird Lake).

1.2 Powers of the District.

Except as otherwise specified by the District Act, the District has all of the rights, powers, privileges, authority, functions, and duties provided by the general laws of this state, including Chapter 36 of the Texas Water Code, applicable to groundwater conservation districts created under Section 59, Article XVI, of the Texas Constitution.

1.3 Severability.

If any one or more of the provisions contained in these Bylaws are for any reason held to be invalid, illegal, or unenforceable in any respect, the invalidity, illegality, or unenforceability may not affect any other Bylaws or provisions of these Bylaws, and these Bylaws must be construed as if such invalid, illegal or unenforceable Bylaws or provision had never been contained in these Bylaws.

SECTION 2. THE BOARD

2.1 Purpose of the Board.

The Board sets policy and makes the final decision on matters not delegated to the General Manager. Board policy is designed to provide for the conservation, preservation, protection, recharge, and prevention of waste of groundwater within the District, as well as to exercise the rights, powers, and duties of the District in a manner that will effectively and expeditiously accomplish the purposes of the Act creating the District, Chapter 36 of the Texas Water Code, and Section 59, Article XVI, of the Texas Constitution. The Board's responsibilities include, but are not limited to, the adoption and enforcement of reasonable rules, policies, permits, orders, and a management plan.

2.2. Board of Directors.

a. The District is governed by the Board, which is comprised of seven (7) elected Directors. A

person who is duly elected and qualifies to serve as a Director on the Board is entitled to participate in votes relating to the business of the District as soon as the Director takes the oath of office.

b. As set forth under the District Act, Directors serving on the District's Board serve four (4) year terms. The Directors comprising the Board are elected in accordance with the provisions of the District Act, with three Directors having staggered terms with the other four Directors.

c. A Director serves on the Board until their successor has qualified for the Directorship under Subsection (a) of this Section. If there is a vacancy on the Board, the Board shall appoint an eligible and willing constituent to serve as Director for the remainder of the vacated term as provided by the District Act.

d. At the first Board meeting following an election or annually during November's regularly scheduled Board meeting, the Board shall select Directors to serve as officers of the Board. The officers to be elected include a President to preside over Board meetings and proceedings, one to serve as Vice President to preside in the absence of the President, and another to serve as Secretary/Treasurer to keep a true and complete account of all meetings and proceedings of the Board. Alternatively, the roles of Secretary and Treasurer may be assigned to separate Directors. The officer's duties may be prescribed by the Board in these Bylaws, the District Rules, duly adopted resolutions or motions made in open meetings of the Board.

    1) The President is the chief executive officer of the District, presides at meetings of the Board, and shall execute documents on behalf of the District. The Vice President shall act as President in case of the absence or disability of the President, except as set forth in Subsection (e) of this Section. The Secretary is responsible for seeing that records and books of the District are properly kept and shall attest the President's signature on documents. The Treasurer ensures financial policies of the District are followed.

    2) The Board may appoint other Directors, the General Manager, or any employee as an assistant or Assistant Secretary to assist the Secretary, and any such person shall be entitled to certify as to the authenticity of any record of the District, including but not limited to proceedings relating to bonds, contracts, or indebtedness of the District.

e. In the event an officer of the Board vacates their position, resigns, becomes unable to serve as an officer or is removed from office, the Board shall select another Director to serve the remainder of the unexpired term of such officer. If the Board selects a Director who holds another position as officer at the time of the vacancy to fill the unexpired term, the Board shall select another Director to serve the remainder of the unexpired term of such second officer.

f. An officer may be removed by majority vote of the Board for any cause and at any regular or special meeting of the Board as long as the matter is posted on the meeting agenda. The Board may vote on the replacement officer at the same meeting following the vote to

remove. The Board agenda must specify that the Board will consider and take action on removal and replacement of one or more officers of the Board. Removal as an officer has no effect on that person's position as a Director.

g. Directors shall, pursuant to the provisions of Chapter 171 and 176 of the Local Government Code and the Texas Water Code, complete and keep updated disclosure forms prescribed by these statutes and timely disclose any conflict of interest with specific matters pending before the Board, and shall also refrain from participation in the discussion or decision on such matters.

h. Persons serving as Directors are volunteers and, as such, will not be compensated for their time dedicated to efforts on behalf of the District.

2.3 Reimbursement.

a. Each Director is entitled to receive reimbursement of actual expenses reasonably and necessarily incurred while engaging in activities on behalf of the District, preferably with preapproval by the Board before the expense is incurred.

b. Any District official desiring reimbursement for expenditures shall present a verified statement thereof to the District, together with all supporting receipts and invoices. These expenses shall be submitted to the District Treasurer or General Manager, and a check for payment of same shall be issued after review and approval.

2.4 Financial Policies.

a. Subject to the laws governing the District and established Interlocal Agreements, the Board shall develop and adopt the following in writing:

1) a code of ethics for Directors as well as other District officers, employees, or any other persons engaged in the handling of assets or investments for the District;

2) a policy relating to travel expenditures and other reimbursable expenses;

3) a policy relating to District investments which ensures that:

a. purchases and sales of investments are initiated by authorized individuals, conform to investment objectives and regulations, and are properly documented and approved; and

b. periodic review is made of District investments to evaluate investment performance and security;

4) policies and procedures for the selection, monitoring, reviewing, and evaluation of professional services contracted for or otherwise utilized by the District; and

5) policies that ensure a better use of management information, including:

a. budgets for use in planning and controlling costs;

b. an audit or finance committee of the Board; and

c. uniform reporting requirements that use "Audits of State and Local Governmental Units" as a guide on audit working papers and that uses "Governmental Accounting and Financial Reporting Standards."

2.5 Meetings and Hearings.

a. The Board may hold a regular meeting each month as the Board may establish from time to time. At the request of the President, or by written request of at least two Directors, the Board may hold special meetings. Board meetings shall be held in accordance with the Texas Open Meetings Act. Each regular or special Board meeting will have notice of the meeting and its agenda posted on the District website and physically at the District office and meeting location no less than seventy-two (72) hours before the meeting. To the extent necessary for orderly conduct of proceedings, the guidelines of "Parliamentary Procedure at a Glance," New Edition, by O. Garfield Jones, 1971 revised edition, or as amended, may be followed.

b. From time to time a Board Meeting may include a Public Hearing to address specific matters such as permitting, rule changes and other matters where a Public Hearing is legally required by statute or by District Rules. ~~Except for rulemaking purposes,~~Each Public Hearing will be ~~separately~~ noticed in accordance with the District Rules or the Texas Open Meetings Act based on the subject matter of the Public Hearing~~no less than ten (10) days~~ before the Hearing, with the Hearing information posted on the District website, at the District office and meeting location, and also notification provided to the Travis County Clerk's Office. ~~Public Hearings for rulemaking will be posted similarly but will have twenty (20) days minimum notice period.~~

c. Notices of Groundwater Management Area (GMA) meetings by the District and with a common agenda provided by the GMA Coordinator will be posted at least ten (10) days in advance of the meeting on the District website, at the District office, and also notification provided to the Travis County Clerk's Office.

d. Public comments of a general nature may be made under a separate public comment item listed on the agenda. Specific comments on any posted agenda item may be made following recognition of the speaker by the Presiding Officer. A speaker may sign up to speak for any posted item and may speak for up to three (3) minutes. Up to five (5) minutes of speaking time may be given to a person speaking on behalf of a group of five or more citizens. Speakers may only address the item for which they signed up. Speakers are not allowed to pass time to other speakers. The Presiding Officer may limit repetitive comments or comments that are cumulative of comments already received by the Board.

e. From time to time and as may be necessary, the Board may hold work sessions to discuss and

evaluate issues in such detail as to require open and free discussion not normally possible in regular Board meetings. During work sessions of the Board, no public comment will be heard, unless specifically requested by a Director and recognized by the Board President or Presiding Officer. Public comment may be made at the time the item(s) is (are) up for discussion at a regular Board Meeting.

f. At any Board Meeting, the Presiding Officer may convene an Executive Session for purposes authorized by Subchapter "D" of the Open Meetings Act to address an item included on the current meeting's agenda. Before conducting the Executive Session, the Presiding Officer shall announce that an Executive Session is being convened and that it is closed to the public, and shall identify the section or sections of the Open Meeting Act under which the closed meeting shall be held. No final action shall be taken in an Executive Session.

g. A majority of the membership of the Board constitutes a quorum for any meeting, and a concurrence of a majority of the entire membership of the Board is sufficient for transacting any business of the District.

h. Should weather conditions or other unforeseen circumstance prevent attendance by a quorum of the Board, the meeting may be canceled and reposted for a later date, not sooner than seventy-two (72) hours after the canceled meeting unless posted as an emergency in compliance with State Law. The District will make reasonable effort to notify the public in advance of a canceled meeting.

2.6 Committees.

a. The Board may establish advisory committees for formulation of policy recommendations to the Board or for such other purposes as the Board may designate. The President shall appoint the committee chairman. The President will take under advisement Director's recommendations for committee members.

b. Members of the various committees may be made up entirely of Directors, entirely of members of the general public, or any combination thereof. A Committee will be made up of residents of the District as much as is feasible. Membership may include individuals residing outside the District when the Board determines it would be in the best interest of the committee's work efforts and the District. Membership is voluntary and committee members serve without compensation.

c. Members of committees will be selected from persons recommended to the Board by Directors.

d. Committee size will be limited to a number that may reasonably address an issue and will be determined by the Board.

e. Members of committees who miss three or more consecutive committee meetings may, at the request of the committee chair, be replaced by the Board President.

2.7 Ex Parte Communications.

Board members may not communicate, directly or indirectly, in connection with any issue of fact or law in any contested case before the Board, with any agency, person, party, or their representatives, except following notice and opportunity for all Directors to participate. A Board member may communicate with other members of the Board on other matters that are or will be posted for consideration by the Board, but may not communicate, either sequentially or by conference, with the number of Directors that would constitute a quorum of the Board, which would violate the Open Meetings Act.

2.8 Sworn Statement; Bond; Oath of Office

As soon as practicable after a Director is elected or appointed, the Director shall make the sworn statement prescribed by the Texas Constitution, take the oath of office, and execute a bond, as required by Section 36.055, Texas Water Code. The District shall file the sworn statement, oath, and bond as prescribed in Section 36.055(d).

2.9 Open Meetings and Open Records Training

Directors shall comply with the requirements for open meetings and open records training as provided by Sections 551.005 and 552.012, Texas Government Code.

SECTION 3. DISTRICT STAFF

3.1 General Manager.

a. The Board may employ or contract with a person to perform those services as General Manager for the District as the Board may from time to time specify. The General Manager shall have the authority to manage and operate the affairs of the District, subject to the policies, guidelines and orders of the Board.

b. The Board may delegate to the General Manager the authority to employ persons necessary for the proper handling of the business and operations of the District and, with consultation of the Board, determine the compensation to be paid to employees other than the General Manager.

c. At least annually, the Board shall determine the compensation to be paid to the General Manager and review the actions and performance of the General Manager to determine how the General Manager has fulfilled their responsibilities and whether additional responsibilities should be delegated.

d. In the absence of a General Manager, the President shall exercise the duties delegated to the General Manager under the Rules of the District.

e. The General Manager serves at the pleasure of the Board, which may take action to modify or terminate such service as it alone deems appropriate.

3.2 Delegation of Authority.

The General Manager may delegate administrative duties as may be necessary to effectively and expeditiously accomplish those duties, provided, however, that no such delegation shall relieve the General Manager of responsibilities that are ultimately the General Manager's under the Act, Rules, or Board Orders.

SECTION 4. MANAGEMENT OF DISTRICT

4.1 Management of District.

a. The Board shall be responsible for the management of the affairs of the District. The District shall employ or contract with persons, firms, partnerships, corporations, or other entities, public or private, deemed necessary by the Board for the conduct of the affairs of the District, including, but not limited to, engineers, attorneys, financial advisors, operators, bookkeepers, tax assessors and collectors, auditors, and administrative staff.

b. The Board shall set the compensation and terms for employees, contract workers, consultants, and other professional service providers.

c. In selecting attorneys, engineers, auditors, financial advisors, or other professional consultants, the District shall follow the procedures provided in the Professional Services Procurement Act, Subchapter A, Chapter 2254, Texas Government Code.

d. The Board shall adopt Bylaws to govern the affairs of the District to perform its purposes and amend them from time to time.

e. The Board may, by resolution, authorize the General Manager or other employee to execute documents on behalf of the District.

f. The Board shall also have the right to purchase materials, supplies, equipment, vehicles, and machinery needed by the District to conduct its affairs.

4.2 Annual Report.

At fiscal year end the President or General Manager shall report to the Board on the status of the District and its programs. The report shall include, if applicable, the following:

1) the status of the Aquifer and the District's programs to protect and conserve the Aquifer;

2) a financial report, including a report from the Board's audit committee, and a report on the performance and security of District investments, if any;

3) a review and evaluation of professional services rendered to the District during the year;

4) a report on the status of any capital projects of the Districts; and

5) an evaluation of the District's performance in light of long-range plans developed pursuant to Section 36.1071 of the Texas Water Code.

The Board shall review and act to accept the Report. After Board acceptance the Annual Report will be published on the District's website.

4.3 Fiscal Year.

The District's fiscal year shall begin on the first day of October 1.

4.4 Budget.

Prior to the commencement of each fiscal year, the Board shall hold a Public Hearing on and subsequently adopt an annual Budget. From time to time, the Board may amend the Budget following a Public Hearing. The District by resolution, following a Public Hearing with ten (10) days notice, shall establish a Fee Schedule each year that comports with the approved annual Budget.

4.5 Audit.

The Board shall prepare an annual examination of its affairs by an independent certified public accountant or a firm of independent certified public accountants, which audit shall be open to public inspection. The audit shall be performed in accordance with generally accepted auditing standards and shall satisfy all requirements imposed by Chapter 36, Texas Water Code.

4.6 Indemnification.

To the full extent allowed by law, the District shall indemnify any Director, officer, or employee, or former Director, officer, or employee of the Board of Directors, or any person who may have served at its request, against expenses actually and necessarily incurred by him or her, and any amount paid in satisfaction of judgments in connection with any action, suit or proceeding, whether civil or criminal in nature, in which he or she is made a party by reason of being or having been such a Director, officer, of employee (whether or not a Director, officer or employee at the time such costs or expenses are incurred by or imposed upon him or her) except in relation to matters as to which he or she shall be adjudged in such action, suit or proceeding to be liable for gross negligence or willful misconduct in the performance of duty. The District may also reimburse any Director, officer or employee the reasonable costs of settlement of any such action, suit or proceeding, if it shall be found by a majority of the Directors not involved in the matter in controversy, that it was in the interests of the District that such settlement be made and that such Director, officer or employee was not guilty of gross negligence or willful misconduct. Such rights of indemnification and reimbursement shall not be deemed exclusive of any other rights to which such Director, officer or employee may be entitled by law or under any Bylaw, Board resolution, agreement, or otherwise.

4.7 Depositories

The Board shall name one or more banks to serve as depository for district funds and shall deposit such funds in accordance with Section 36.155, Texas Water Code.

4.8 Investments

Funds of the District may be invested and reinvested in accordance with the provisions of the Public Funds Investment Act, Chapter 2256, Texas Government Code, and in accordance with the Iinvestment Ppolicy of the District.

4.9 Loans

No loans shall be contracted on behalf of the District and no evidence of indebtedness shall be issued in its name unless authorized by resolution of the Board, executed by the President, and attested to by the Board Secretary/Treasurer.

SECTION 5. DISTRICT

5.1 District Address.

a. The District's mailing address is P.O. Box 340595, Austin, Tx 78734.

b. The District mailing address and office address may be changed from time to time by resolution of the Board.

5.2 Minutes and Records of the District.

a. The Board shall keep a complete account of its meetings and proceedings, and shall preserve its minutes, contracts, records, notices, accounts, receipts, and other records in a safe place.

b. The records of the District are the property of the District and are subject to Chapter 552, Government Code.

c. The preservation, storage, destruction, or other disposition of the records of the District is subject to the requirements of Chapter 201, Local Government Code, rules adopted thereunder, and the District's Document Retention Policy.

d. Documents, reports, records, and minutes of the District shall be available for public inspection and copying in accordance with the Public Information Act.

5.3 Certified Copies.

Requests for certified copies must be made on the "Open Records Request". Certified copies shall be made under the direction of the General Manager. Persons who are furnished certified copies may be assessed a certification charge, in addition to the copying charge, pursuant to policies established by the Board or General Manager.

5.4 Office Hours.

The regular office hours of the District shall be determined by the General Manager or the Board. From time to time, circumstances may require the General Manager to modify these hours on a temporary basis. Operating hours, both regular and temporary, shall be posted on or near the front door to the District office.

5.5 Official Seal.

By resolution, the Board may adopt an official seal for the District to be used on permits and other official documents of the District.