

AGENDA ITEM 16**Consider making appointments to Park Advisory Board.**

The court discussed possible candidates for the Park Advisory Board.

No action was taken on this agenda item, which will be added to the March 26, 2002 agenda.

AGENDA ITEM 17**Consider approving additional services proposal from Thornhill & Associates for additional test well at Williamson County Regional Park.**

Paul Linehan of Land Strategies discussed water options and the pilot water wells for the Williamson County Regional Park. He stated that so far approximately \$75,000 has been spent on consultants and drilling for test wells. The last test well appeared to have good water quality, but the shell lining is collapsing. He asked for a maximum of \$73,150 for each well to dig them, case them and start pumping water from them.

Mike Thornhill of Thornhill Group, Inc. discussed the test wells that have been drilled and submitted a written proposal to the court for consideration.

Purchasing Director Bob Space stated that the Local Government Code has a statutory limit of \$25,000 on expenditures without advertising and accepting bids, unless the court exempts the drilling of the well as a professional service.

It was determined that the test part of the well could be drilled as a professional service, and that an agenda item will be added to the March 26, 2002 meeting to designate the rest of the project as a professional service, in order to finish the production well.

Moved: **Commissioner Heiligenstein**

Seconded: **Commissioner Boatright**

Motion: To approve additional services proposal from Thornhill Group, Inc. for additional test well at the Williamson County Regional Park.

Vote: 4 - 0

< Attachment >

**THORNHILL GROUP, INC.**

Professional Hydrogeologists • Water Resources Specialists

March 19, 2002

The Honorable John C. Doerfler, County Judge
Williamson County Commissioners Court
c/o Mr. Paul Linehan, President
Land Strategies, Inc.
1010 Land Creek Cove, Suite 100
Austin, Texas 78746

Re: Potential Deep Ground-Water Supply Development -
Southwest Williamson County Regional Park

Dear Judge Doerfler:

Per request of Ms. Annette Todd of Williamson County Commissioners Court (County), Thornhill Group, Inc. (TGI), formerly d.b.a. Thornhill & Associates, provides herein a brief summary of test drilling results and recommendations and associated cost estimates for subsequent work in obtaining needed ground-water supplies for irrigation at the subject facility. TGI is currently preparing final report products for the work conducted to date, and will provide them to the County within about two weeks after the proposed work is completed, or within about three weeks from now if the proposed work is not conducted.

Results of Drilling and Testing Program

Work conducted during the drilling and testing program was based on preliminary hydrogeologic investigations including obtaining and evaluating available topographic and geologic maps, published and unpublished hydrologic and geologic reports, and well records for local well including drillers logs, geophysical logs, well completion information, well production records, historical water-level measurements and water-quality data.

GeoProjects International (GPI) provided drilling and testing contractor services, and TGI personnel conducted field geologic and hydrologic investigations and testing. During drilling of test holes, geologic samples were collected for every 10 feet of hole drilled. Air-drilling

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methods allowed for monitoring the amount of water produced and field water-quality parameters as the hole is advanced. Shallower target zones were tested prior to drilling to deeper zones. Once holes were drilled to targeted depths, geophysical logs were obtained for each hole.

Based on preliminary geologic and hydrologic investigations, geologic units were encountered at depths anticipated, and Test Hole No. 1 was drilled to 1,100 feet below land surface. However, the base of the Hosston formation (i.e. the basal part of the Lower Trinity aquifer) was not penetrated. Therefore, Test Hole No. 2 was drilled to 1,200 feet and logged. Drilling conditions prevented advancing the hole deeper, and the entire thickness of the formation was still not penetrated, indicating that the Hosston is significantly thicker than available maps show.

The Edwards aquifer and Upper Glen Rose limestone (i.e. Upper Trinity aquifer) are not sufficiently productive to provide reliable water supplies in the area. The static water level in the Middle Trinity aquifer is approximately 315 feet below land surface, and the bottom of the Middle Trinity is at depths of about 850 to 900 feet below land surface. Wells completed in the Middle Trinity at the test sites could likely produce between about 30 and 60 gallons per minute (gpm), probably averaging about 50 gpm each. However, producing from wells completed in the Middle Trinity aquifer may cause water-level declines in private wells located within one-half to three-quarters of a mile from proposed park wells. Water from the local Middle Trinity is not potable without treatment. The water is characterized by high sulfate concentrations, but should be suitable for most irrigation purposes. However, turf grass and irrigation experts should be consulted.

The Lower Trinity aquifer is isolated from the Middle Trinity by the Hammett Shale, which forms a confining layer approximately 50 to 60 feet thick. The top of the Lower Trinity aquifer was penetrated at approximately 930 feet below land surface. The upper part of the Lower Trinity aquifer is more productive than the Middle Trinity aquifer, with wells likely capable of producing approximately 100 gpm or more each. Also, producing from the Lower Trinity would not significantly impact neighboring wells. However, the quality of water from this zone is poor, with high sodium, chloride, sulfate and total dissolved solids (TDS) concentrations, which would likely require blending of water with other sources to utilize for irrigation.

A basal section of the Hosston formation, herein called the "Deeper" Lower Trinity, was encountered in Test Hole No. 2 at a depth of approximately 1,165 feet below land surface. During drilling, the production of the test hole increased once the zone was encountered. Heaving in the overlying Hammett Shale prevented drilling deeper than about 1,210 feet and isolating the zone for any additional production testing. Therefore, the thickness of the basal unit could not be determined with certainty and production estimates for the zone could not be obtained. Isolation sampling was conducted, and the quality of water from the basal zone appears to be similar to that in the Middle Trinity aquifer, which confirmed the resistivity signature on the geophysical log, and is probably suitable for most irrigation purposes.

THORNHILL GROUP, INC.Proposal to Williamson County - Southwest Regional Park
March 18, 2001

A summary of drilling and testing results is provided below:

Producing Zones	Depth Interval (feet)	Well Capacity (gpm)*	General Water Quality					Comments
			Conductance (uS)	TDS (mg/l)	Sodium (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	
Edwards	0 - 40	0	NA	NA	NA	NA	NA	NA
Middle Trinity	580 - 880	40 - 50	2,660	1,810	308-344	130-172	918-995	Impacts on neighbors
Lower Trinity	930 - 1,160	75 - 100	4,670	3,120	804	1,180	627	Poor water quality
"Deeper" Lower Trinity	1,165 - 1,210	Unknown	2,870	1,700	429	218	907	Unknown yields

The asterisk (*) indicates that the pumping rate is per well.

Recommended Pilot Well Completion

Due to the potential for obtaining acceptable quality water from the "Deeper" Lower Trinity aquifer, TGI recommends the following for completing a pilot water well on the property. The completion process will allow for testing the deep zone and, if unsuccessful, will allow for conversion of the cased hole into an operable well completed in the Middle Trinity aquifer, which will mitigate excess expenditures for additional testing of the deeper zone. The recommended completed procedure includes:

- Ream (if possible) or drill to a depth of 1,165 feet, set casing and cement intervals of 0 to 200 feet, 875 to 930 feet and 1,100 to 1,165 feet below ground level.
- Drill to the bottom of the basal Lower Trinity zone and obtain geologic samples and a geophysical log.
- Conduct production testing and collect water quality samples.
- If productivity of well is favorable, then the open hole will be reamed and a slotted liner installed.
- If productivity of well is not favorable, then the open hole and casing will be plugged with neat cement, and the casing will be perforated adjacent to the Middle Trinity formation to complete the well.

RECORDERS MEMORANDUM

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clearly legible for satisfactory recordation.

THORNHILL GROUP, INC.

Proposal to Williamson County - Southwest Regional Park
March 18, 2001

In deliberating this Proposal, the County should consider the following:

- The quantity of water available from the "Deeper" Lower Trinity is unknown without additional testing. Although, the production from the test hole increased noticeably when the basal zone was encountered, the actual amount of production available from the basal zone (by itself) is not yet known.
- It is possible that some leakage may occur from the poorer quality part of the Lower Trinity into the "Deeper" Lower Trinity. However, the rate and impacts of such leakage on water quality may be impossible to determine prior to pumping.
- The location of Test Hole 2 was selected for testing purposes and is not necessarily the most favorable well location based on pipeline needs.
- Costs for the work can vary if unusual conditions or complications are encountered.

Cost Estimate

Estimated costs for TGI services are based on two weeks of field services, data workup and providing a summary letter report of results to the County. The estimated costs are based on the assumption that the work is conducted under relatively normal working conditions and that no extraordinary complications are encountered.

Cost estimates for well construction, laboratory and logging contractors are based on two separate scenarios. The first assumes that a successful deep Lower Trinity well is completed to a depth of 1,265 feet, while the second is based on plugging back the hole and converting it to a successful Middle Trinity well approximately 900 feet deep. Cost estimates for both scenarios include completing fully operational wells, complete with permanent pumping equipment, control boxes and starters.

Estimated costs are provided below:

	<u>Deep Lower Trinity Well</u>	<u>Middle Trinity Well</u>
Thornhill Group, Inc. Services	\$ 11,600	\$ 10,500
Subcontractor Services*	\$ 61,550	\$ 60,650
Total Estimated Costs	\$ 73,150	\$ 71,150

The asterisk (*) indicates that the costs are based on GPI costs. These costs compare favorably to costs provided previously for designing, completing and testing Middle Trinity wells; \$9,600 for TGI services and \$48,185 for subcontractor services for a total of \$57,785 for each well. Therefore, additional testing of the deeper Lower Trinity zone will result in additional costs to the County of about \$13,000 to \$15,000 for one well site.

THORNHILL GROUP, INC.Proposal to Williamson County - Southwest Regional Park
March 18, 2001

TGI fees and costs will be determined by actual man-hours and expenses directly associated with completing the work, and are based on the attached Standard Fee Schedule.

Schedule

TGI anticipates that the actual fieldwork once begun will require approximately 2 to 3 weeks to complete, assuming no unusual conditions are encountered. Based on previous project scheduling, the drilling contractor will be available the week of March 25th. Therefore, the work should be completed between April 5th and April 12th, after which time the well should be usable as long as power is available to operate the pump.

Authorization

TGI is prepared to schedule and conduct the work upon verbal or written authorization by the County. If this Proposal is acceptable, please authorize work by contacting me at (512) 244-2172 or by returning this authorization to me via facsimile at (512) 244-1461.

We very much appreciate the opportunity to continue serving the County by providing you this Proposal, and look forward to assisting you in obtaining needed water supplies for the proposed park.

If you have any questions, please call.

Sincerely,
THORNHILL GROUP, INC.



Michael R. Thornhill
President

Proposal to Williamson County -- Southwest Regional Park
March 18, 2001

APPROVED: Williamson County

John C. Doerfler
(Client Signature)

County Judge
(Title)

John C. Doerfler
(Printed Name)

3-19-02
(Date)

Attachments

cc: Mr. Paul Linehan, Land Strategies, Inc.
Mr. John Jansing, P.E., Gray-Jansing & Associates, Inc.

 **THORNHILL GROUP, INC.****ATTACHMENT A****STANDARD FEES FOR PROFESSIONAL SERVICES
BY THORNHILL & ASSOCIATES**

Fees for professional services provided by Thornhill & Associates are based on the actual and direct time of personnel on the project at the following hourly rates:

Principal	\$ 120
Technical Staff 4	\$ 105
Technical Staff 3	\$ 95
Technical Staff 2	\$ 85
Technical Staff 1	\$ 75
GIS Staff	\$ 65
Graphics Staff	\$ 55
Clerical Staff	\$ 40

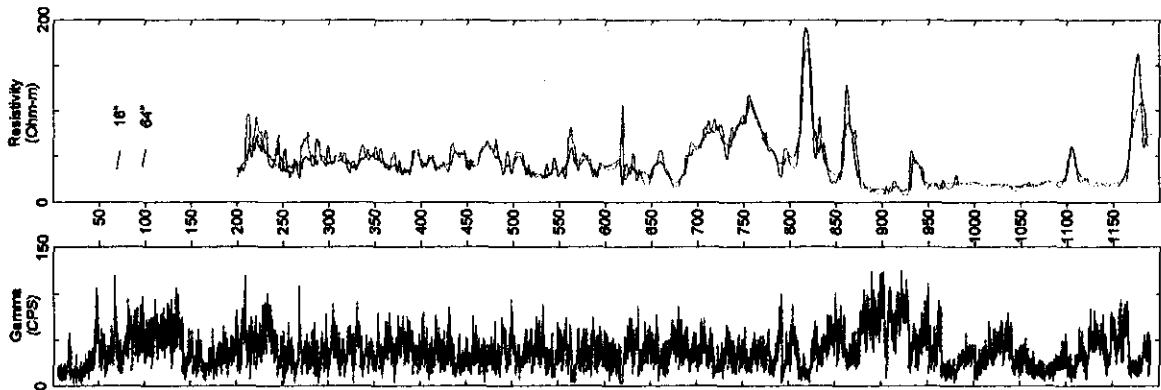
Reimbursement for actual expenses incurred that are directly related to work and performance on the project are billed per the following, plus ten percent:

- a. for reproductions by graphics department, charges equivalent to commercial rates for similar commercial services.
- b. for transportation in company or personal vehicles, mileage will be billed at the current IRS approved rate per mile (\$0. 315).
- c. for use of company field equipment, including but not limited to steel tapes, electric lines, conductivity, pH and turbidity meters, computers, data recorders, transducers and air monitoring equipment, charges are equivalent to commercial rates for similar equipment rentals.
- d. for all other expenses, including but not limited to reproduction, transportation, meals, lodging, parking, taxi fares, vehicle rentals, airfare, long distance telephone calls, printing, maps, photographs, field supplies, equipment rental, shipping, drilling contracting, laboratory costs, charges will be the actual invoice costs.

Invoices are payable upon receipt, and accounts unpaid more than 30 days after the billing date are subject to 1.25 percent interest per month (15 percent annual rate) from the invoice date.

Logs and Well Completion Options Test Hole No. 2

Geophysical Log



Aquifers

EDWARDS

UPPER TRINITY

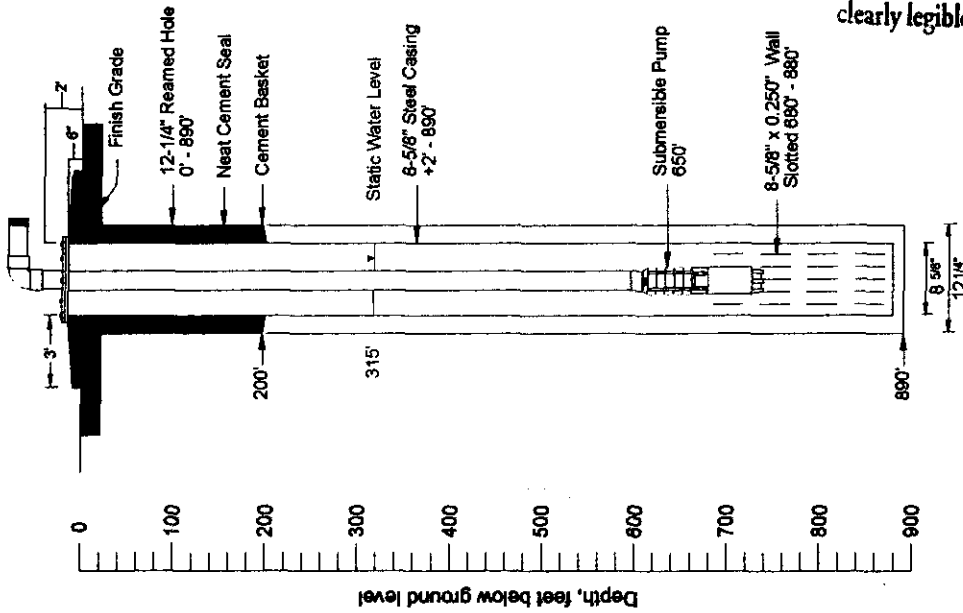
MIDDLE TRINITY
(Lower Glen Rose)

MIDDLE TRINITY (Target Zone)
Static Depth to Water Level: 315'
Well Production: 50 gpm
Water Quality:
TDS: 1,810
Na: 305-344
Cl: 130-172
SO₄: 818-885

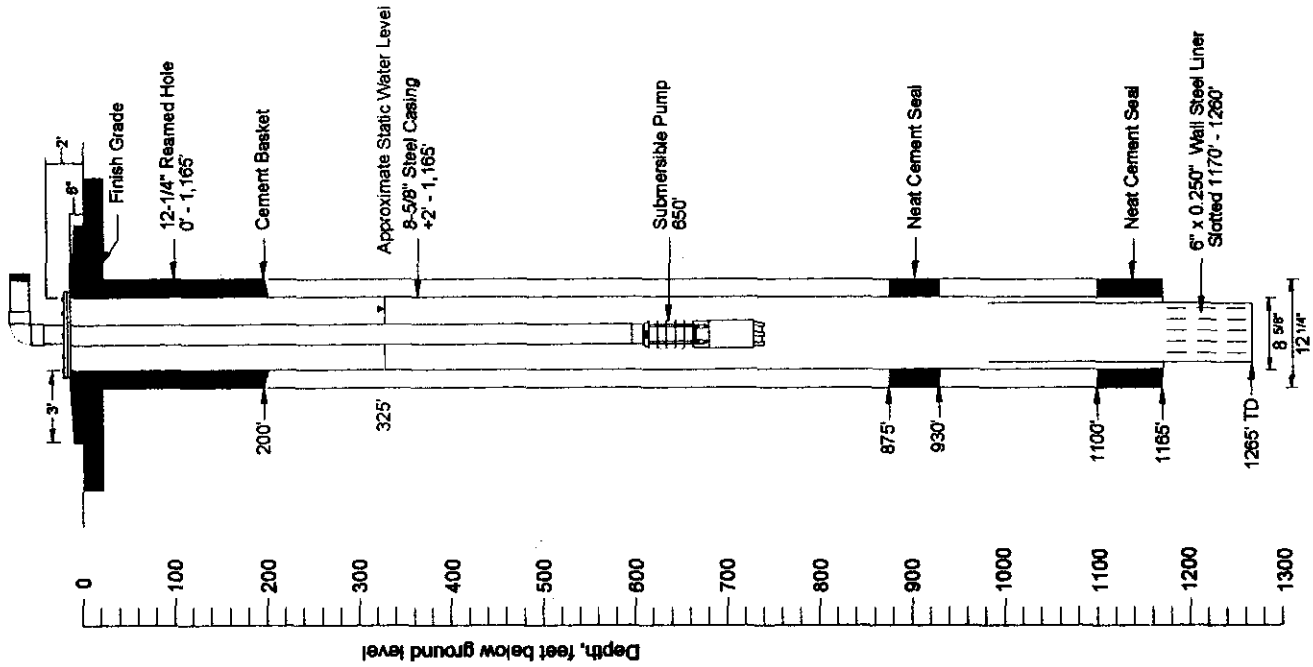
LOWER TRINITY
Static Depth to Water Level: 325'
Well Production: 75-100 gpm
Water Quality:
TDS: 3,120
Na: 804
Cl: 1,180
SO₄: 627

"DEEPER" LOWER TRINITY
Static Water Level: Unknown
Well Production: Unknown gpm
Water Quality:
TDS: 1,700
Na: 439
Cl: 218
SO₄: 607

Middle Trinity Completion



"Deeper" Lower Trinity Completion



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clearly legible for satisfactory recordation.

AGENDA ITEM 18

Consider approving proposal for geotechnical engineering services for East Williamson County Park Facility.

Moved: **Commissioner Limmer**

Seconded: **Judge Doerfler**

Motion: To approve a proposal from Patton, Burke & Thompson, LLC for geotechnical engineering services for the East Williamson County Park facility.

Vote: 4 - 0

< Attachment >



2600 McHale Court, Suite 180

Austin, Texas 78758

512.832.8883

FAX 512.832.8886

February 26, 2002

Williamson County
c/o Fisher Hagood, Inc.
One Chisholm Trail, Suite 5200
Round Rock, Texas 78681

Re: **Proposal For Geotechnical Engineering Services
Williamson County Park
SH 95 @ FM 397; Taylor, Texas
PBT Proposal No. 2002-029**

Dear Mr. Fisher:

Patton, Burke & Thompson (PBT) is pleased to submit this proposal for geotechnical engineering services for the subsurface investigation for the above referenced project. Based on your facsimile dated February 21, 2002, we understand that you desire a total of eight borings within the footprint of the proposed structures, five borings within the proposed retention ponds and a total of twelve borings within the areas of the proposed pavement and parking areas. We also understand that the proposed structures are to be single-story steel-framed buildings.

SCOPE OF WORK

The following describes the scope of work we propose and the assumptions we have made regarding the site requirements:

Field Investigation

- One (1) exploratory boring within the footprint of the proposed pavilion to extend to twenty-five feet below existing grade,
- Two (2) exploratory borings within the footprint of the proposed pavillion to extend to twenty feet below existing grade,
- Two (2) exploratory borings within the footprint of the proposed recreation center to extend to twenty-five feet below existing grade,
- Three (3) exploratory borings within the footprint of the proposed recreation center to extend to twenty feet below existing grade,
- A total of five (5) exploratory borings within the area of the two proposed retention ponds to extend to twenty feet below existing grade, and