

AGENDA ITEM 24

Consider approving contract with Thornhill and Associates for hydrological testing at Southwest Regional Park.

Moved: **Commissioner Hays**

Seconded: **Commissioner Heiligenstein**

Motion: To approve a contract with Thornhill and Associates for hydrological testing at Southwest Regional Park.

Vote: 3 – 1 with Judge Doerfler voting against the motion.

< Attachment >

**THORNHILL & ASSOCIATES**

Professional Hydrogeologists • Water Resources Specialists

December 4, 2001

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: Ground Water Availability Assessment and Well Siting Program ..
Southwest Williamson County Regional Park

Dear Judge Doerfler:

Per request by Mr. Paul Linehan of Land Strategies, Inc., the following comprises our Proposal including Scope of Services and associated Cost Estimate for Thornhill & Associates to provide consulting services to Williamson County (County) relating to obtaining suitable quantity of acceptable quality ground water for potable and irrigation supplies for the proposed park.

Thornhill & Associates specializes in hydrogeologic and ground-water related projects. The firm has substantial experience in studies involving the occurrence, movement, quality and availability of ground water, and in designing and testing wells and well fields for effective development of ground-water supplies in numerous aquifers across Texas. We have provided siting, design and field-testing services in designing and completing wells and selecting pumping equipment for numerous irrigation and public water system wells with pumping rates ranging from 10 to more than 2,000 gallons per minute (gpm).

Based on information obtained by Mr. John Jansing, P.E. of Gray-Jansing & Associates, Inc. (GJ&A), development of the park will initially require supplies averaging about 720,000 gallons per day (gpd) or more for irrigation, especially during grow-in periods. Based on current plans, public water supplies will be obtained from other municipal sources, and not from wells on the property. Therefore, wells supplying an average of about 500 gpm or more will be needed for the project.

The subject property is located along the western edge of the recharge zone (i.e. outcrop) of the Edwards aquifer. However, the Edwards and associated limestone layers are relatively thin locally, and cannot supply sufficient volumes of water to wells for the project. Therefore, the Trinity aquifer will be tapped to obtain the needed supplies for irrigation and potable uses. Thornhill & Associates has provided similar consulting services for several projects pertaining to



the Edwards and Trinity aquifers in Williamson, Travis, Bell, Burnet, Kendall, Bandera and Kerr counties.

SCOPE OF SERVICES

Existing wells of the depth, size and capacity needed for the project are not common in the project area. Also, producing zones in the Trinity aquifer can be extremely variable and unpredictable over small areas. Due to the nature of the aquifer, probably several wells will be needed to obtain the quantity of water necessary for successful park irrigation. Therefore, standard well siting and completion techniques used in obtaining small domestic supplies should not be applied to this project. An effective initial test drilling program can provide an efficient and cost effective means for obtaining sufficient data to determine whether sufficient water is available for the project, and to provide critical information for well designs and well-field layouts. Without such a program, several expensive and possibly improperly sized and located wells may be installed, resulting in unwarranted expenditures. Therefore, the proposed Scope of Services herein is divided into subsequent work phases with sequential tasks designed to satisfy the needs of the project and to attempt to minimize undue expenditures.

The services are designed to satisfy specific needs and requirements of the project, including:

- Assessing the availability of needed ground-water supplies for the project, particularly related to the target aquifers and producing zones, the number of wells needed, well sizes and depths, and water quality.
- Implementing an effective drilling and testing program, including collecting sufficient geologic information, water-level and water-quality data and estimated well production characteristics.
- Designing wells and well fields to effectively develop ground-water supplies, including identifying favorable wells sites, selecting target producing intervals, properly designing wells and pumping equipment and determining spacing between wells.
- Evaluating aquifer conditions and assessing the likely short- and long-term supplies of ground water available from wells completed on the proposed property, including important productivity, reliability and water-quality characteristics and potential impacts due to pumping on the target aquifer(s) and nearby wells.
- Providing all necessary information, data, reports and other submittals in order to sufficiently describe the availability of ground-water supplies, and to comply with pertinent permitting and regulatory requirements, including approvals from the Texas Natural Resources Conservation Commission (TNRCC) and for other appropriate agencies, municipalities or other governing entities.



Thornhill & Associates will coordinate work with LSI and GJ&A, and will provide work products to the County as directed by them. The proposed work, including field investigations, well completion, pumping tests and reporting will be conducted according to standard practices and in strict accordance with applicable rules and guidelines.

PHASE 1 – PRELIMINARY GROUND WATER AVAILABILITY ASSESSMENT

Task 1 – Preliminary Hydrogeologic Evaluation and Planning

This task will include collecting, compiling and evaluating currently available data for the proposed project area and conducting preliminary assessments as to the likely quantity and quality of ground water available locally. Specifically, work in this task will include:

- Reviewing for the property and nearby areas available aerial photographs, topographic and geologic maps, and published and unpublished geologic and hydrologic reports.
- Compiling and reviewing records and data for existing local wells, including geologic and/or geophysical logs, well completion reports, production records, water-quality information and water-level data.
- Assessing information relating to potential quantities and quality of water needed for effective irrigation of the park grounds and amenities including ball fields, golf course and common areas, and for potable water supplies.
- Conducting preliminary ground water availability estimates and well spacing calculations.
- Deriving preliminary assessments as to potential impacts on nearby wells due to pumping.

Thornhill & Associates will provide the County, LSI and GJ&A a summary report of the preliminary evaluations. Task 1 work will form the basis for subsequent work tasks, and will be necessary to properly implement drilling and testing programs.

Task 2 – Drilling, Testing and Field Programs

This task will include designing and implementing initial field drilling and testing programs. During this task, pilot test holes will be drilled, tested and sampled. Also, accessible local wells may be inventoried, monitored and sampled. Specifically, this task will include:

- Identifying preferred locations for production wells, based on development layouts of the park and on assessments of available hydrogeologic data (i.e. Task 1).



- Field inventorying including sampling, measuring water levels and collecting other pertinent information for local wells, if accessible.
- Conducting drilling and testing at two (2) pilot test hole sites. The drilling and testing program will be designed to obtain as much information as possible, while minimizing costs. The program will include:
 - o Drilling pilot holes to selected depths. For purposes of this proposal, the Lower Trinity aquifer will be targeted with depths of about 1,100 feet.
 - o Collecting geologic and water samples from target zones during drilling process. Field water-quality parameters will be measured and selected samples sent to laboratories for analyses of primary water-quality indicators.
 - o Obtain a geophysical log of each test hole.
 - o Conduct production testing and collect samples via air-lift pumping, if possible. If air-lift pumping (i.e. jet testing) methods are not successful, then temporary casing may be set for testing purposes. During jet testing or test pumping Thornhill & Associates will supervise and collect appropriate production information, water-level measurements and samples for water quality analyses.

All drilling and testing will be conducted utilizing proper protocols and in accordance with rules and guidelines of the TNRCC, Texas Water Well Drillers Board and other appropriate entities. Thornhill & Associates will coordinate drilling schedules and plans with LSI, GJ&A and selected contractors.

Task 3 – Project Coordination, Meetings and Reports

Throughout the project, Thornhill & Associates will work closely with LSI, GJ&A and selected contractors to effectively coordinate the work and to periodically report progress. Additionally, Thornhill & Associates will be available for project meetings as needed. Finally, this task will include a written report summarizing the information and results collected during Phase 1 work. The report will include:

- Data compilation, analysis and results from Task 1 and Task 2 work items.
- Recommendations as to well completion, well locations and spacing, target zones and subsequent work tasks (i.e. Phase 2).
- Estimates as to well yields and water quality available from wells completed in target zones beneath the property.
- Pertinent cost estimates.

Results from Phase 1 work will provide the basis for designing and implementing Phase 2 programs.



PHASE 2 – GROUND-WATER SUPPLY DEVELOPMENT EVALUATIONS

Phase 2 work will be contingent upon results of Phase 1 work and probable continued refining of the actual water requirements for the project. A general outline of Phase 2 work is provided below, however, detailed Phase 2 work plans will be developed and recommended in Phase 1 reports.

Task 1 – Well and Well Field Design Consultation

Work will include:

- Providing recommendations as to well design, well completion methods and procedures, and testing and sampling programs.
- If any wells will be used as public supply wells, then this task will include providing preliminary drawings and information to GJ&A for required submittals to TNRCC.

Task 2 – Well Completion and Testing Services

This task will primarily involve technical and consulting services in the field, including:

- Inspection of critical tasks during drilling, logging and well completion phases of the work, and recording the information in standard formats.
- Conducting pumping tests to assess production capabilities of each well, and to assess aquifer production characteristics. These tests will include well acceptance tests and, if any wells are used for public water supply purposes, tests required by TNRCC.
- Collecting appropriate samples for water-quality analyses.
- Providing recommendations for final pumping equipment, pump settings and pumping rates.
- Compiling data and information from well completion operations including logs, drawings, sample results and other important items.

Task 3 – Ground-Water Production and Impacts Assessment and Report

This task will include preparing a detailed report based on information and data collected during Phase 1 and Phase 2 work tasks. The report will include applicable tabulations, drawings, maps, logs, diagrams and charts illustrating the ground water conditions and well completion information. The report will include:



- Evaluations of well completions and capacities.
- Estimates as to likely short- and long-term pumping rates for the production wells.
- Summary of water quality available from the wells, and any recommendations regarding treatment of the water for use as irrigation or public drinking supplies.
- Models and/or calculations and estimates regarding ground water availability for the project and probable impacts regarding water levels in wells on and near the property and water quality in the target zones.

Task 4 – Project Coordination and Meetings

As with Phase 1 work, Thornhill & Associates will work closely with GJ&A and LSI in coordinating work and providing appropriate updates and progress reports. Additionally, Thornhill & Associates will be available for meetings as needed.

COST ESTIMATES

Cost estimates for Thornhill & Associates services for completing Phase 1 work are included in Attachment A. Thornhill & Associates' services as proposed herein are estimated to be approximately \$31,250. Thornhill & Associates' fees and costs will be determined by actual man-hours and expenses directly associated with completing the work tasks outlined above, and are based on the attached Standard Fee Schedule (Attachment B). Invoices are issued monthly and are payable upon receipt.

Estimated costs for subcontractor services for the project range from \$34,500 to \$60,500. A general estimate of subcontractor costs is provided in Attachment C. Estimated subcontractor costs for well completion, testing and laboratory sample analyses will depend upon the contractor selected, the actual well design, testing conditions and requirements and the sampling required.

The cost estimates provided are based on the assumption that conditions encountered are generally comparable to those in similar projects, and that the work can be completed with generally routine methods and efforts. If additional work is needed, Thornhill & Associates will provide written recommendations to LSI and GJ&A and will not proceed without express and written approval.

**SCHEDULE**

Once authorized, Thornhill & Associates will begin securing contractors and scheduling the work. We understand that irrigation water will be needed by early spring. Project completion is primarily dependent upon availability of drilling contractors, accessibility of the testing sites and actual hydrogeologic conditions encountered.

If this Proposal including the Scope of Services, Cost Estimate and scheduling are acceptable, please authorize work in the space provided below and return a copy to us via facsimile or mail. Upon receipt of an executed copy, we will proceed with the work.

We very much appreciate the opportunity to provide you this Proposal, and look forward to assisting you in our specialty, and in obtaining needed water supplies for the proposed park.

If you have any questions, please call.

Sincerely,

Michael R. Thornhill

APPROVED: *Williamson County*

(Client Signature)

County Judge
(Title)

John C. Doerfler
(Printed Name)

12-18-01
(Date)

Attachments

cc: Mr. John Jansing, P.E., Gray-Jansing & Associates, Inc.



**Cost Estimate – Thornhill & Associates Services
Ground Water Availability Assessment and Supply Development -
Southwest Williamson County Regional Park**

PHASE 1- PRELIMINARY GROUND WATER AVAILABILITY ASSESSMENT

<u>Task</u>	<u>Description</u>	<u>Cost Estimate</u>
1	Preliminary Hydrogeologic Evaluation and Planning	
	Thornhill & Associates Services	\$ 4,900
	Expenses	\$ 400
	Task 1 Subtotal	\$ 5,300
2	Drilling, Testing and Field Programs	
	Thornhill & Associates Services	\$ 18,100
	Expenses	\$ 1,750
	Task 2 Subtotal	\$ 19,800
3	Project Coordination, Meetings and Reports	
	Thornhill & Associates Services	\$ 4,500
	Expenses	\$ 450
	Task 3 Subtotal	\$ 4,950
	PHASE 1 TOTAL	\$ 31,250

PHASE 2 – GROUND WATER SUPPLY DEVELOPMENT EVALUATIONS

<u>Task</u>	<u>Description</u>	<u>Cost Estimate</u>
1	Well and Well Field Design Consultation	To Be Determined
2	Well Completion and Testing Services	To Be Determined
3	Ground Water Production and Impacts Assessment and Report	To Be Determined
4	Project Coordination and Meetings	To Be Determined



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.



**Cost Estimate – Drilling and Well Completion Services
Ground Water Availability Assessment and Supply Development -
Southwest Williamson County Regional Park**

<u>Description</u>	<u>Costs Per Site</u>	<u>Number Of Sites</u>	<u>Total Costs</u>
PHASE 1 – EXPLORATION DRILLING AND TESTING			
Drilling and Testing Program			
Mobilization/Demobilization	\$ 1,000	-	\$ 1,000
Drilling, Formation and Water Sampling	\$ 8,500	2	\$ 17,000
Geophysical Logging	\$ 2,000	2	\$ 4,000
Jetting/Pumping Test	\$ 2,200	2	\$ 4,400
Set Temporary Casing*	\$ 10,000	2	\$ 20,000
Laboratory Services	\$ 600	2	\$ 1,200
Plugging**	\$ 3,000	2	\$ 6,000
Contingency (25%)	\$ 4,325	-	\$ 8,650
Subtotal (*)(**)	\$ 17,875		\$ 34,500
PHASE 2 – WELL COMPLETION, TESTING AND PUMPING EQUIPMENT (CONTINGENT)			
Well Completion – Irrigation Wells			
Set Casing, Screen and Cement	\$ 54,000	4	\$ 216,000
Development	\$ 3,000	4	\$ 12,000
Production and Acceptance Testing	\$ 5,000	4	\$ 20,000
Laboratory Services	\$ 1,000	4	\$ 4,000
Final Pumping Equipment and Surface Completion	\$ 14,246	4	\$ 56,984
Contingency (25%)	\$ 19,312	-	\$ 77,246
Subtotal	\$ 96,558		\$ 386,230
Well Completion – Public Supply Wells			
Set Casing, Screen and Cement	\$ 64,500	2	\$ 129,000
Development	\$ 3,000	2	\$ 6,000
Pumping Tests	\$ 7,500	2	\$ 15,000
Laboratory Services	\$ 1,500	2	\$ 3,000
Final Pumping Equipment and Surface Completion	\$ 14,246	2	\$ 28,492
Contingency (25%)	\$ 22,687	-	\$ 45,373
Subtotal	\$ 113,433		\$ 226,865

* Indicates that plugging will only be conducted if production or water quality characteristics are unfavorable at a site, and the hole is abandoned. Not included in total Phase I cost estimate.

** Indicates that temporary casing may be set if jet testing in open hole is unsuccessful. Not included in total Phase I cost estimate, therefore costs could be higher per site.

Note: Well costs will vary based on drilling contractor selected and actual hydrogeologic conditions encountered at drilling sites. Number of wells required will depend upon actual water needs and aquifer characteristics.

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TOTAL P.13

AGENDA ITEM 25

Discuss and take appropriate action on road bond program.

No action was taken on this agenda item.

AGENDA ITEM 26

Discuss and take appropriate action on jail/courthouse annex expansion.

No action was taken on this agenda item.

AGENDA ITEM 27

Consider awarding, rejecting, or extending bids received for uniforms for law enforcement and jail personnel.

Bids were received from the following:

C & G Wholesale

Miller Uniforms

Moved: **Commissioner Hays**

Seconded: **Judge Doerfler**

Motion: To award the bid for uniforms for law enforcement and jail personnel to Miller Uniforms, as recommended by the County Auditor's office.

Vote: **4 - 0**

< Attachment >