

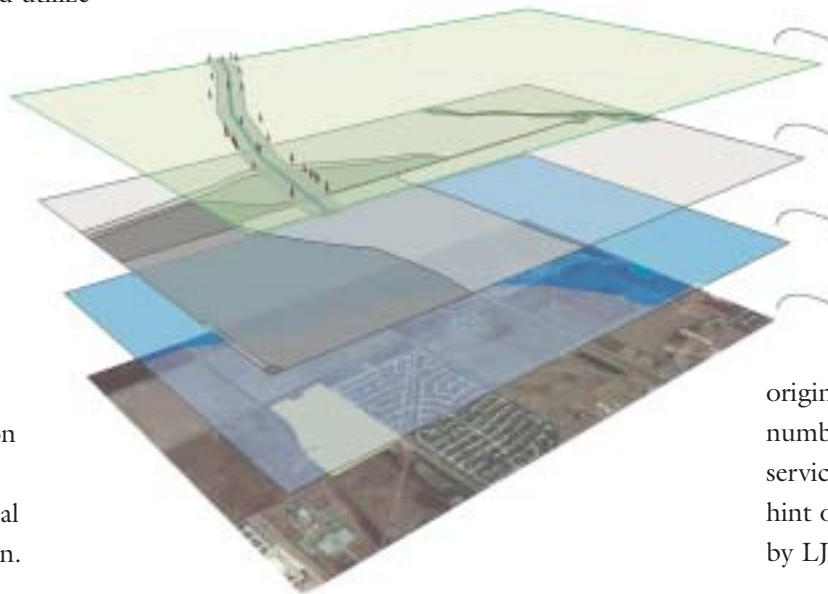
# DISCOVERY AND GIS

## AT LJA

The powerful technology fueling GIS (Geographic Information Systems) continues to expand at astounding rates, offering LJA Engineering & Surveying the opportunity to find new and better ways to manage and utilize information to the benefit of its clients. Through projects such as the LJA Discovery Program, GIS provides an efficient means of providing clients with accurate, detailed information from initial project development to final project construction.

Geographic Information Systems (GIS) gives the user or map audience the spatial relationships between natural and man-made features, jurisdictional boundaries and proposed planning or construction. By overlaying select datasets or related features, GIS can not only visually display the relationship between a particular parcel of land and the proximity to proposed infrastructure (ex. Grand Parkway alignment), it also provides the necessary information to

allow for a detailed analysis of surrounding geographic and economic impacts, giving the developer an understanding of how their parcel fits into the real world.



*Proposed Grand Parkway Alignment*

*FEMA Coverage*

*Watershed Boundaries*

*Aerial with Property Boundary*

GIS also furnishes the tools needed for geographic data management. Underground water utilities can not only be accurately depicted but clicked to display installation date, diameter,

originating water treatment plant, or number of homes and specific addresses serviced. These applications offer only a hint of the GIS functionality employed by LJA.

GIS stores and maintains the data associated with many features to be found within the parcel. For example, a Utility District dataset not only shows the District boundaries as it relates to the parcel, but also contains the total district tax rate, date of creation, District Engineer, financial status, number of Directors and District functions.

Of the LJA projects utilizing GIS, the Discovery Program has emerged as one of the most significant. "Discovery" embodies a fast, efficient means of locating and analyzing potential properties for development. The Discovery process provides the developer with much of the information usually collected during the feasibility or due diligence phase of the land development process, phasing it to the

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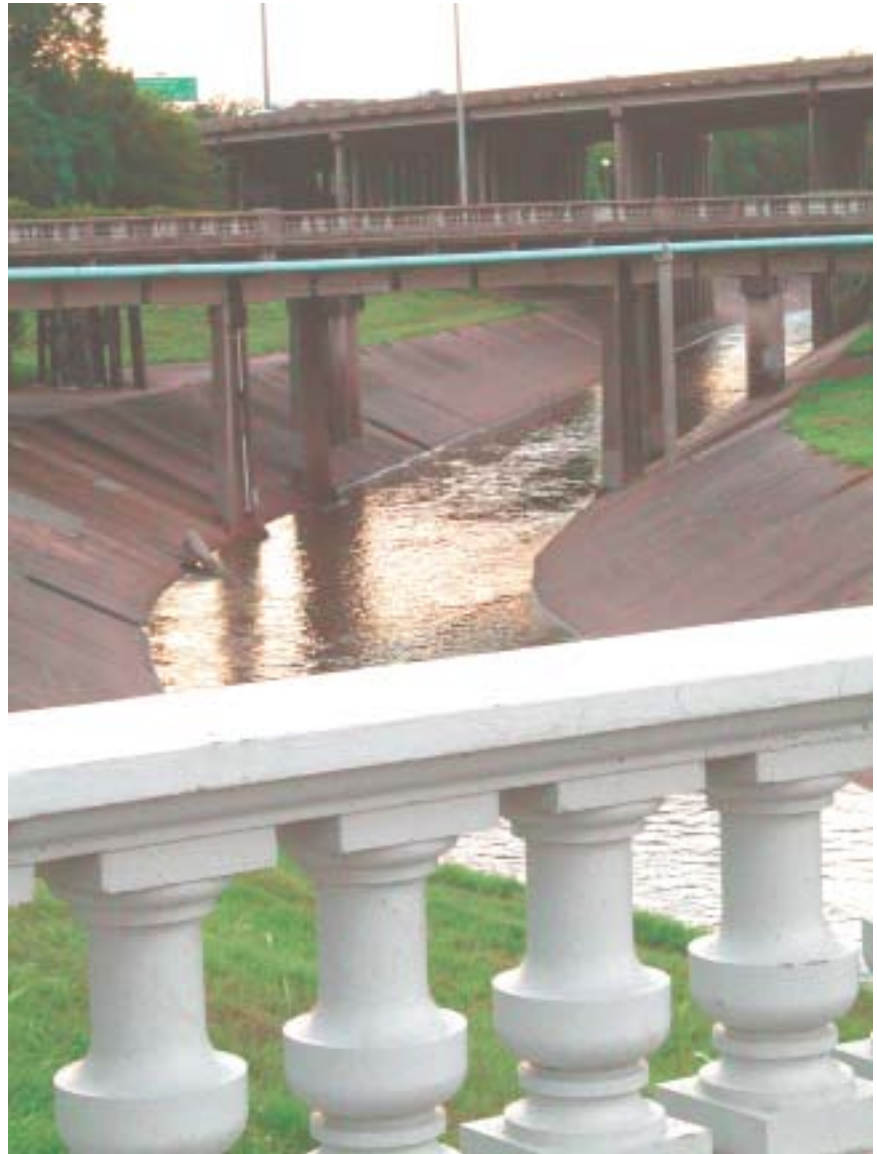
# LJA ASSISTS WITH WHITE OAK BAYOU FLOOD CONTROL PLAN

In June, the Harris County Flood Control District hired LJA Engineering to provide project management and engineering support services in the development of a master flood control plan for White Oak Bayou. The bayou is a 25-mile long stream draining an area of over 111 square-miles from north of Highway 6 through the City of Jersey Village in northwest Harris County down to Buffalo Bayou in downtown Houston.

More than 11,000 residences were damaged in the White Oak Bayou watershed due to extensive flooding with Tropical Storm Allison in June 2001. The damages, along with previous damaging floods in 1998 from Tropical Storm Frances and in 1992, made it clear that a plan is necessary. Commented Dave Winslow, LJA senior consultant, "Our role is to help manage the project and develop a cost-effective plan of action that will significantly reduce flooding and be accepted by all the stakeholders".

The Flood Control District is developing the project to obtain federal funding under Section 211f of the Water Resources Development Act of 1996. To qualify for federal funding, the project must meet strict federal criteria for engineering, economics, and environmental impact and must be approved by the U.S. Army Corps of Engineers. Preliminary construction costs for the project are estimated in the \$200 million range.

Acting as overall project managers, LJA is directing a team of firms in the



engineering, economics, and environmental analysis of alternatives solutions. Alternatives to be considered cover a full range of possibilities, including channel modifications, stormwater detention, levees, flood plain buyout, and combinations of all these. The alternatives will be evaluated using state-of-the-art GIS-based hydrologic, hydraulic and economic models. The feasibility report is scheduled for submittal in mid 2004.

LJA has directed a similar 211f project for the Harris County Flood Control District for Brays Bayou. Summarized Dave Winslow, "Our challenge is not only finding the right engineering solution for White Oak Bayou, but developing consensus among the residents and other stakeholders in the areas subject to flooding and all the agencies in the 211f process. We have our previous experience to help in reaching those goals."

# LJA AND KB HOME - MAKING TRACTS

KB Home is a nationwide homebuilder specializing in homes for entry-level and first-time trade-up homebuyers. In 2002, the company built homes for more than 25,000 people, earning one of the highest home-start records in the industry.

LJA is currently providing engineering services for two separate KB Home communities in the greater Houston area. In both cases, LJA has accommodated the client's aggressive schedule, which focuses on making lots construction-ready in record time.

## *Lexington Place*

As a small, 25-acre subdivision adjacent to the larger KB Home project Lexington Square, Lexington Place is located within Missouri City, near the corner of 5<sup>th</sup> Street and Lexington Boulevard, just east of Murphy Road (FM1092).

LJA is providing design and construction administration engineering services for the single-family development, planned to contain 130 lots and several pocket parks. Unlike most sites in the area, the Lexington Place property had a significant slope and required extensive grading.

LJA provided hydrology and hydraulics design for the project, including a small lift station. Also included was the expansion of 2,000 linear feet of Lexington Boulevard, connecting 5<sup>th</sup> Street to the subdivision entrance.

Design for the property began in March and construction began in July. The completion date for all construction was November 2003.

As part of an existing TIRZ, the community will support an ongoing redevelop-



*Willow Springs Subdivision Site in Northwest Houston*

opment effort in the 5<sup>th</sup> Street area.

“Through a cooperative effort between the TIRZ, Missouri City, Quail Valley Utility District, and KB Home, we were able to develop a challenging site, extend Lexington Boulevard, and utilities to the area, as well as create entry-level housing opportunities – all of which support the objectives of the TIRZ” said Rick Van Den Bosch, project manager at KB Home.

## *Willow Springs*

On the northwest side of Houston, LJA is providing design and construction phase services for the 300-acre Willow Springs subdivision, also developed by KB Home. Plans call for an eventual 1,450 single-family lots.

LJA's services include internal water, sanitary sewer, storm sewer, and paving, a master drainage plan, storm water detention pond and a sanitary sewer lift station, as well as an off-site outfall

drainage channel and offsite water line extension and sanitary sewer force main. The property will be annexed into the existing Mount Houston Road MUD.

Located west of I-45 at State Highway 249, the property will be bisected by T.C. Jester Road when it is completed as part of the regional thoroughfare plan. The site offers 1,500 feet of frontage on SH 249 and 3,400 feet on T.C. Jester. LJA also provided a Traffic Impact Analysis as part of a TxDOT requirement to tie into SH 249.

Feasibility studies on the community were completed in November 2002, and design began in June 2003. Completion of 255 lots in the southwest quadrant is scheduled for April 2004, as Phase I in a projected 5-6 year project life.

The Willow Springs community includes a three-acre recreation center with a playground and swimming pool.

# DISCOVERY

(Continued from page 1)

very beginning of the process, before the developer invests any time or money. Beginning with pre-loaded aerial photography and county appraisal district parcel maps, clients begin a search for locations of interest throughout the eight county Houston area. After tracts are located, an assortment of useful layers can be overlaid on the site. Floodplain, wetlands, municipal utility district boundaries, mobility plans and pipeline data represent only a few of the 25 standard discovery layers used. Depending on availability, the number of layers may increase dramatically per county. If any of the layers reveal a detrimental obstacle to the development of the site, the tract is discarded, and the



Carlton Woods Utility Map prepared by GIS Group

next possible location is assessed with minimal time spent. The process continues until tracts viewed as suitable from the initial study are found. Clients are then provided with paper maps of the tracts to take from the office. From start to finish the process usually lasts less than a few hours.

This ability to analyze several locations without substantial time contributions has proved to be the largest benefit of the discovery process and the reason for its overwhelming popularity.



Galveston County MUD 29 - showing detail on MUD and Sanitary Sewer

Another reason for the Discovery Program's increasing popularity is the cost to the client. LJA provides all aspects of the discovery process free of charge. This includes everything, from the initial meeting to customized and accurate site maps. LJA does not view the Discovery Program as a means of revenue but as a valuable tool to provide assistance to our clients.

The future of the Discovery Project and other projects centering on Geographic Information Systems is managed by a growing group of GIS professionals at LJA. The GIS group is lead by George

Culver, who has gained much individual success with his work with Geographic Information Systems. He heads a team of analysts experienced in all aspects of GIS project management.

Recent group accomplishments include The Tropical Storm Allison Recovery Project, Rolling Creek Utility District and Galveston County Municipal Utility District 29 GASB 34 compliance, San Jacinto River Authority Parcel Ownership, The Woodlands water and wastewater utilities mapping, and day to day support of LJA land development, hydrology, and transportation projects.

# INFRASTRUCTURE IMPROVEMENTS IN PROGRESS IN PASADENA, TEXAS

In an effort to provide relief to an area historically plagued by flooding and poor drainage conditions, LJA is providing reconstruction and drainage improvement design services for approximately one-half mile of roadway in the Stadium Estates subdivision in Pasadena, Texas.

LJA was selected by the City of Pasadena to address the existing drainage and pavement problems along Beusch Drive as part of the City's Capital Improvement Plan. According to Frank Cox, LJA project manager, the drainage problems are the result of an undersized storm sewer system throughout the subdivision which contributed to the road deterioration. "This road, like many others in the area, is facing the end of its design life and the drainage problems have not helped the situation," said Frank.

The existing drainage problems within the subdivision are the result of a lack of storm sewer systems on adjacent streets to intercept rainfall sheet flow which is directly flowing onto Beusch Drive and into its capacity storm sewer system. The drainage problems will be resolved by increasing the number of existing inlets and providing additional storm sewers to accommodate drainage. The existing profile of the roadway will also be adjusted to improve drainage. When completed, the area will be able to accommodate a three-year storm event.



Stadium Estates Subdivision, Pasadena, Texas

As part of the pavement design for the proposed roadway between Jane Road and Strawberry Road, LJA redesigned two intersections to improve safety by removing the skewed alignments through the intersections and eliminating the severe dips from the existing roadway. Mark Gardemal, Assistant City Engineer for the City of Pasadena, stated, "LJA found a way to alleviate a problem that had been worsening for years. This is an excellent example of how value engineering, with attention to detail, can improve conditions economically."

LJA Insights is published for Clients and Friends of the firm.

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# LJA & WOODLANDS NEAR 30-YEAR ANNIVERSARY

Extending a relationship begun in 1973, LJA Engineering continues to provide civil engineering services for The Woodlands as it grows and matures.

## The Waterway connection

A milestone project for both The Woodlands and LJA is the Woodlands Waterway®, the large, multi-phase construction of a canal, pedestrian and transit corridor connecting the 30-acre Lake Robbins and the 200-acre Lake Woodlands. In addition to creating a community asset and providing multi-modal transportation, The Waterway is designed to facilitate drainage for the area.

The Waterway project was partially funded by Federal monies made available to provide for clean transportation and improved mobility. LJA has provided hydrology, structural, roadway and civil engineering design for both sections of The Waterway.

The first section, a five-acre system bordering The Woodlands Waterway Marriott Convention Center, consists of a canal with hardscape on both sides. With water taxis, pedestrian walkways and a tram system, this southern leg of The Waterway will provide alternative transportation between The Cynthia Woods Mitchell Pavilion and Lake Robbins starting this fall.

The second phase of The Waterway project consists of a one-half mile extension from Lake Robbins to The Woodlands Mall. Designed as a colorful, pleasant, pedestrian environment, The Waterway will consist of large, paved walkways



*Woodlands Waterway Aerial*

bordered by retail, entertainment and dining establishments. Boats will run on The Waterway, and eventually catered cruises will be available to take parties for a tour on Lake Robbins.

Alex Sutton, P.E., The Woodlands Operating Company, L.P. Senior Vice President, comments, “The Woodlands Waterway is a prime example of how engineering can translate into amenities. We’re very excited to be offering

residents this distinctive, yet very practical feature.”

## District updating – ahead of the curve

Although it is by comparison a young community, after over two decades of operation, many of The Woodlands’ existing water and wastewater utilities require routine service or maintenance.

In 2002, LJA was instrumental in assisting the San Jacinto River Authority

# WOODLANDS

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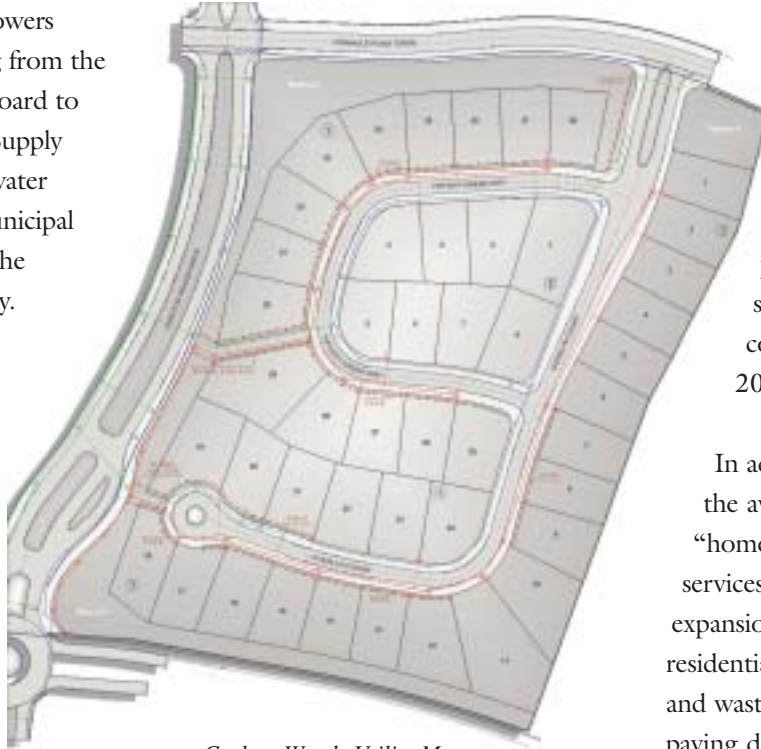
and The Woodlands Joint Powers Agency obtain grant funding from the Texas Water Development Board to complete a Regional Water Supply Facility and Regional Wastewater Facility Plan covering 11 Municipal Utility Districts comprising the entire Woodlands community.

As a result, LJA is developing a GIS dataset representing a comprehensive inventory of The Woodlands' utility lines and facilities on 25,000 acres. The data will establish capacities and connections for current lines, record past and future work orders, and create a geometric network of all facilities and utilities. The project is expected to take two years.

Beyond mapping out every utility link from source to destination, the data set will include detailed information on water sources, storage lines, plants, lines, and water points. Storm sewer data will include inlet, storm lines, manhole locations, storm water pump stations and storm sewer outfall.

The collected data and geometric network will give the users the ability to analyze connectivity, capacities, ancestral relationships and isolation of pipes for repair.

Comments George Culver, LJA GIS department manager, "With this tool, if there's a water break on any street, they can trace it upstream, find the right shutoff valve, and identify the affected



Carlton Woods Utility Map

homeowners. The information will help prioritize repairs and improvements and track them for future reference."

## Continued growth

As part of a continued transportation improvement plan, LJA is beginning engineering design for the widening of the main east-west thoroughfare Research Forest Drive from four to six lanes.

LJA is also providing interim improvements, drainage analysis, signal modifications and traffic control for the

phased construction of the mile-long portion of the roadway, located just west of Shadow Bend Place.

According to Linc Wright, LJA project manager, design is scheduled for three months, with construction to be completed by 2005.

In addition, on the northern end of the award-winning, master planned "hometown," LJA is providing services to The Woodlands for the expansion of the Sterling Ridge residential community, including water and wastewater utility, drainage and paving design.

LJA recently completed work on the expansion of the civil site portion of the Gary Player Golf Course and clubhouse. Says Calvin Ladner, LJA president, "Our affiliation with The Woodlands has



Research Forest Drive

allowed us to work on some of the top golf courses in the area designed by golf's greatest champions – Palmer, Nicklaus and Player. It has been a tremendous experience."

# COMMUNITY TAKES SHAPE ON CLEAR LAKE

Altair Development hired LJA to provide engineering services for a unique boating/marina community on the shores of Clear Lake, west of South Shore Harbour.

When complete, Constellation Pointe will consist of 86 residential lots and a 160 slip marina. Section One has 18 lots with an average size of 70 by 550 feet. These large wooded lots extend to the center of the Constellation Pointe channel. Section Two lots range in size from 60 by 115 feet to 148 feet deep. Almost all lots have views of either the Canal, Clear Lake or the Marina.

Homes in the private gated community are expected to run from \$300,000 to the million dollar plus range. Many homeowners will have their own private docks or they may moor their boats in the Constellation Pointe Marina.

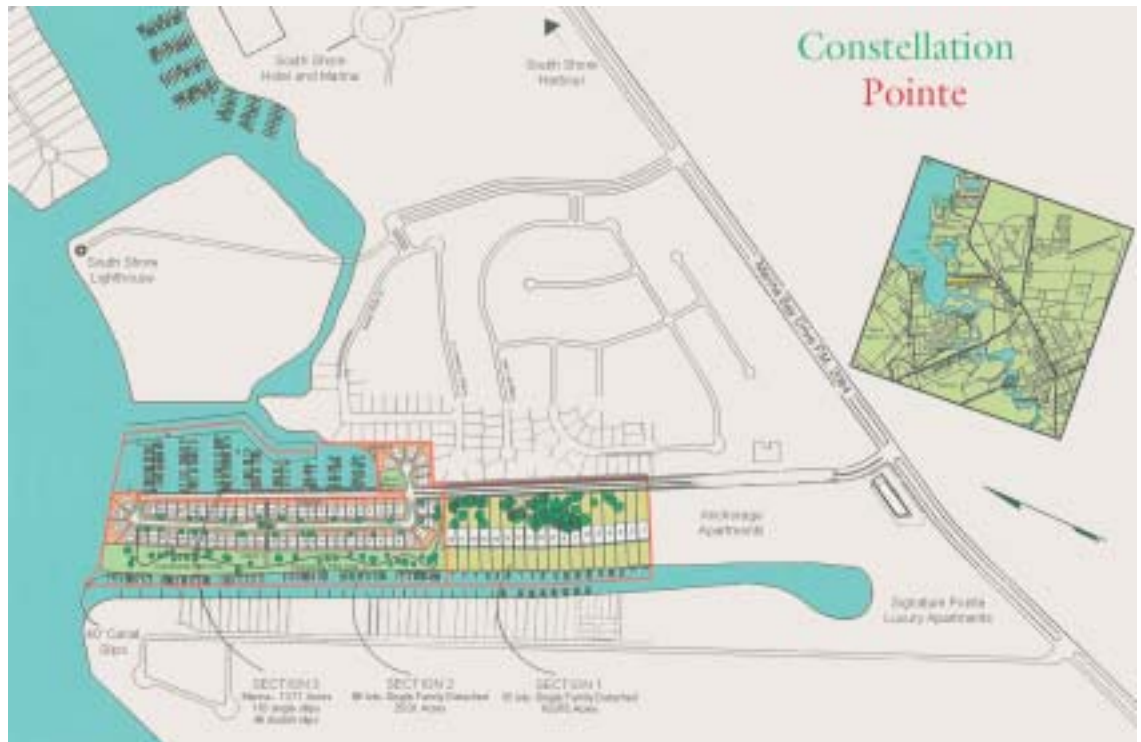
This new waterfront community is being developed on a peninsula on Clear Lake. The project is located on the northeast side of League City at the intersection of Marina Bay Drive (FM 2094) and Constellation Pointe Blvd. The development will be extensively landscaped, surrounded by a modern bulkhead and enhanced by a tree preservation and planting program. A large private park with

nature trails, swimming facilities and marina services are some of the amenities for the homeowners.

As part of its services, LJA is providing platting, water, sewer, drainage and paving engineering for Phase I, II and III of

Altair Development Corporation has been a developer in the Houston area for more than 20 years with key projects in the Friendswood and Pearland area.

Mitch Mitchell, owner and developer, said: "This is one of the last large proper-



the development. A master plan analysis provided by LJA has been approved by League City and permitting for the bulkhead and marina will be processed through the US Army Corps of Engineers.

To provide access to the property, LJA also performed engineering design for a 1,300-foot extension and widening of the existing Constellation Boulevard, as well as a traffic signal at its intersection with Marina Bay Drive (FM 2094).

ties available on Clear Lake with deep water access to Galveston Bay and the Gulf of Mexico. Mid-size yacht owners can step out their back door to cruise the world if they so desire. Constellation Pointe homeowners will have a rare opportunity to enjoy beautiful water views and live a lakeside lifestyle that is very close to a major urban area."

Construction on Phase One of Constellation Pointe is currently underway, with Phase Two to follow immediately.

# NEW DEVELOPMENT ON HOUSTON'S SOUTH SIDE

LJA is currently setting the stage for a new planned mixed-use development in the City of Manvel, Texas. The client is The Milestone Companies.

Currently called South Six, the development, contains approximately 1,300 single-family lots, with a 65-acre parcel reserved for commercial projects. The 400-acre site is located at the intersection of SH 288 and SH 6.

LJA began providing land planning services for The Milestone Companies in 2002, developing feasibility studies and basic land plans for the property. Several alternatives were developed and analyzed from both economic and aesthetic perspectives. The final plan incorporated the best mix for The Milestone's first purely residential project in Houston.

In addition to its land planning services, LJA is currently providing district creation services for the new Brazoria County MUD No. 30, the second in-city MUD for Manvel, which lists its current population at 3,733.

The Milestone Companies, an established commercial and industrial

developer, is developing the community to take advantage of the expansion of the South Freeway (SH288). SH 288, officially named the Nolan Ryan Expressway, is scheduled to stretch from Houston's central business district to Lake Jackson.

According to The Milestone Companies project manager Jacob Malca, "Interest from builders indicated that the time was right to develop South Six. We're looking forward to participating in the growth that is projected for this area of Houston."



Conceptual Land Plan Prepared by LJA

# RUNNING OF THE BULLS FUN RUN

In association with the April 2003 NFL draft event, the Houston Texans football team sponsored a 5K “Running of the Bulls” Fun Run. The 5K Fun Run, which was held on April 26<sup>th</sup>, 2003, started at Reliant Stadium, wound through the streets of south Houston, and ended up back at the Stadium. The Texans hired LJA to provide a traffic control plan to allow runners to safely traverse the busy streets of south Houston.



According to Linc Wright, LJA project manager, “Designing the Traffic Management Plan to detour traffic for the early morning Saturday run involved obtaining permits from both the City of Houston and the Texas Department of Transportation. As part of the overall Plan, LJA also established resource needs in terms of traffic control (cones, barricades and advance warning signs) and police officers”.

Approximately 5,000 people participated in the “Running of the Bulls” race event. All proceeds were donated to local charities.

# HOMEBUILDERS HIRE LJA IN NORTHWEST HOUSTON

Phase I construction is currently underway for a 148-acre development located at FM 2920 and Kuykendahl Road in northwest Houston. Located in Northwest Houston, a rapidly growing sector of the city and convenient to The Woodlands, Greenspoint, George Bush Intercontinental Airport and major employers such as Compaq and Willowbrook Mall, a total of approximately 610 homes priced at \$110-\$150K with 50-foot lots are planned for the new community of Spring Terrace. The community is being developed by Centex Homes and McGuyer Homebuilders, Inc. (MHI). MHI has three principal product lines, Coventry Homes, Plantation Homes and Pioneer Homes. Centex and MHI are ranked among the “Top 20 Houston-Area Homebuilders” by the Houston Business Journal. Each firm is developing half of the residential lots. Centex is handling the construction of the major infrastructure on behalf of both builders. Centex Homes has contracted with Development

Consultants, Inc., a Houston, Texas based development company, to manage the development of their 305 lots, while MHI is managing their own lot development.

LJA was hired in October 2002, to provide a development feasibility study. Subsequently, the firm was engaged to supply surveying and design services for the water, sanitary sewer and drainage facilities, as well as a sanitary lift station and offsite utilities. LJA will also provide street paving design, and the related construction phase services.

Drainage for the property was designed to include a stormwater pump station, with plans for a tie-in to a future drainage



channel. One of the two pipelines that traverse the property is planned for relocation. Included in the first phase of construction are the detention pond, storm water pump station, a sanitary lift station, offsite utilities as well as Sections 1 and 2 that are scheduled for completion in March 2004.

# IN MEMORIAM

In May of 2003, LJA lost long-time employee, **Victor Vazquez** to his battle with cancer. Victor had been with LJA for over 22 years, and was a good friend to many of us. He is greatly missed.

Victor began working at LJA as a draftsman and worked his way up to the position of Project Manager and stockholder of the firm. For more than 20 years with the firm, he was actively involved with The Woodlands, contributing to many of this community's unique and award winning projects.

LJA has set up a trust fund to help provide for the future needs of Victoria and Veronica Vazquez, Victor's children. If you would like to learn more about the fund, please contact Libby Fransen at 713.953.5200.

# EMPLOYEE ANNOUNCEMENTS

The Management Committee of LJA is pleased to announce the addition of four new stockholders to the firm. These individuals have contributed greatly to the firm's continued success and growth during the past year. They include, **David Theisen, P.E., Cathy Shaw, Libby Fransen and Barbara Foss.**

**Two LJA employees recently received their Professional Engineer's License from the State of Texas.**

These individuals are **Ray Chu, P.E.** and **Chad Johnson, P.E.** Please join us in congratulating these individuals in achieving this major milestone in their professional careers.

**Ms. Sarah Nuttall, P.E.** has joined LJA as a Structural Engineer serving the firm's Land Development and Transportation Divisions.

**Mr. Jason Kelly, P.E.** has joined LJA as a Project Manager in the firm's Land Development Division.

**Mr. Gregg B. Haan, P.E.** has joined LJA as a Project Engineer in the firm's Water and Wastewater Group.

**Mr. Elliot Huang, P.E.** has joined LJA as an Project Engineer in the firm's Hydrology & Hydraulics Division.



**LJA Engineering & Surveying, Inc. (LJA)** is a full-service consulting engineering firm serving the public and private sectors in Texas. The firm, previously known as Lichliter/Jameson & Associates, Inc., continues its focus and dedication to providing high quality infrastructure design services to its clients. Employee owned and operated, **LJA** is able to provide responsive and cost competitive services. Current assignments include some of Houston's and the surrounding area's largest master-planned communities, regional and local flood control projects, urban and rural roadway design projects, as well as numerous construction management and surveying assignments.

The staff of **LJA Engineering & Surveying, Inc.** includes over 190 experienced civil engineers, transportation engineers, hydrologists, construction managers, land planners, designers, technicians and surveyors.

**LJA** is directed by the firm's management team led by Bill Jameson, Calvin Ladner, John Perry, Jim Moehlman and David Winslow. This group has over 125 years of combined experience in municipal and land development engineering in Texas.

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**LJA Engineering & Surveying, Inc.**

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