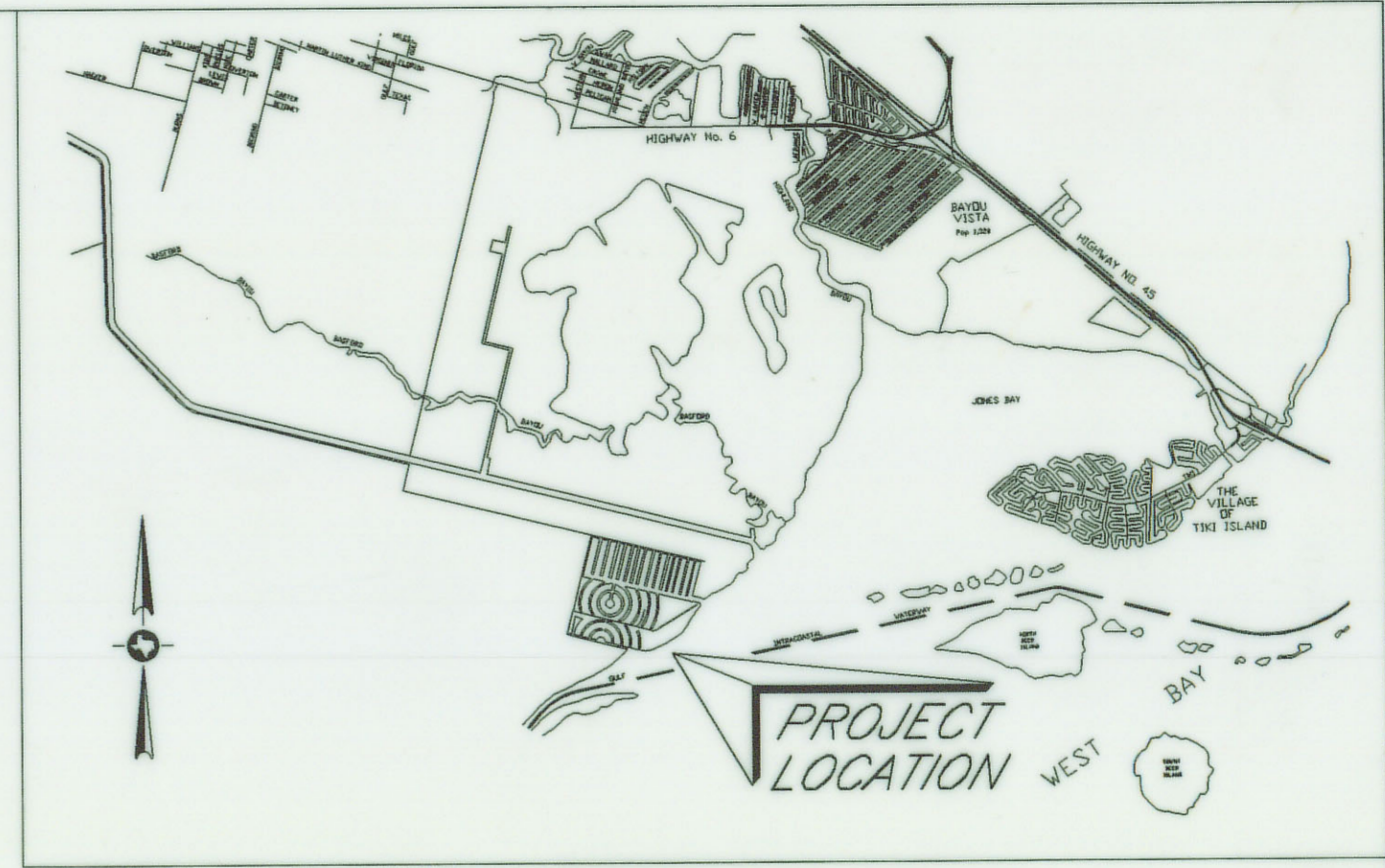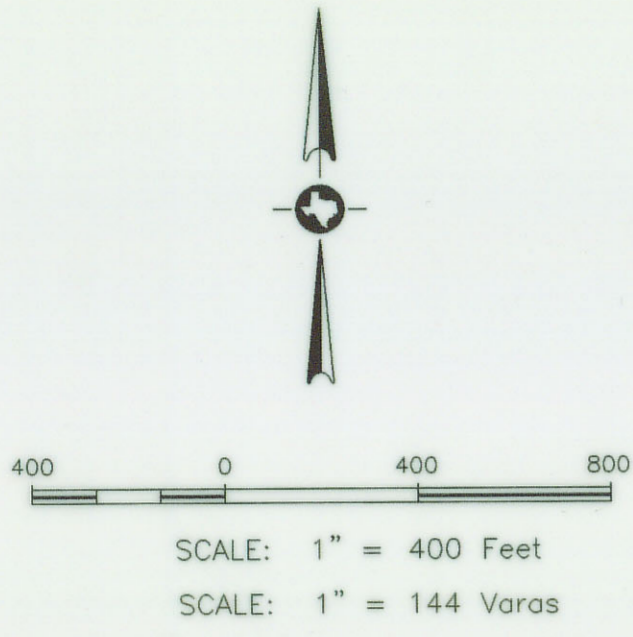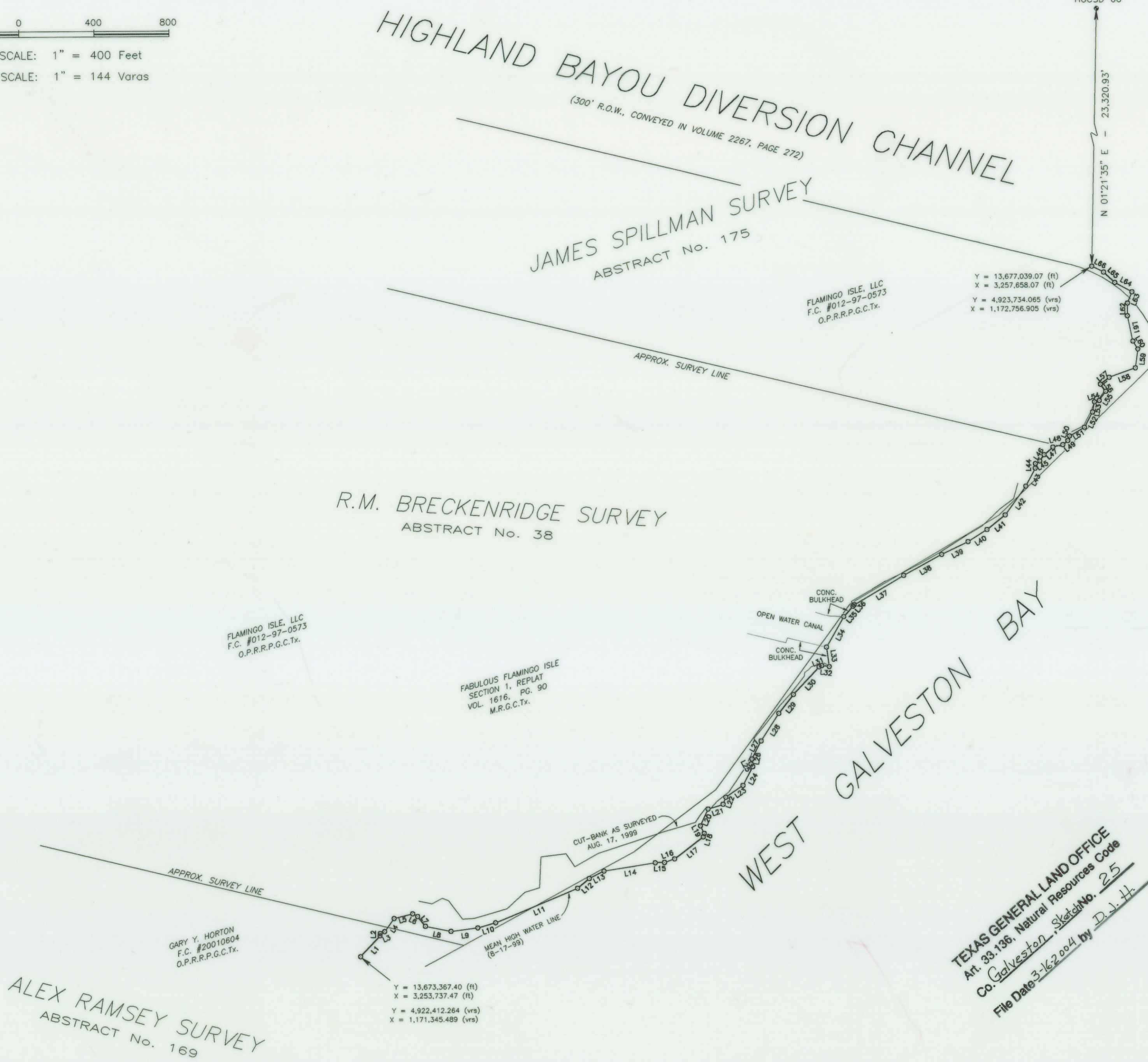# SURVEY OF MEAN HIGH WATER ALONG THE WEST BAY OF GALVESTON BAY, KNOWN AS FLAMINGO ISLES, SITUATED IN THE R.M. BRECKENRIDGE SURVEY, ABSTRACT NO. 38, GALVESTON COUNTY, TEXAS

VICINITY MAP
SCALE: N.T.S.

PROJECT LOCATION

WEST BAY

SCALE: 1" = 400 Feet
SCALE: 1" = 144 Varas

HIGHLAND BAYOU DIVERSION CHANNEL
(300' R.O.W., CONVEYED IN VOLUME 2267, PAGE 272)

JAMES SPILLMAN SURVEY
ABSTRACT No. 175

APPROX. SURVEY LINE

FLAMINGO ISLE, LLC
F.C. #012-97-0573
O.P.R.R.P.G.C.Tx.

R.M. BRECKENRIDGE SURVEY
ABSTRACT No. 38

FLAMINGO ISLE, LLC
F.C. #012-97-0573
O.P.R.R.P.G.C.Tx.

FABULOUS FLAMINGO ISLE
SECTION 1, REPLAY
VOL. 1616, PG. 90
M.R.G.C.Tx.

CONC. BULKHEAD
OPEN WATER CANAL
CONC. BULKHEAD

WEST GALVESTON BAY

CUT-BANK AS SURVEYED
AUG. 17, 1999

APPROX. SURVEY LINE

MEAN HIGH WATER LINE
(8-17-99)

GARY Y. HORTON
F.C. #20010604
O.P.R.R.P.G.C.Tx.

ALEX RAMSEY SURVEY
ABSTRACT No. 169

Y = 13,677,039.07 (ft)
X = 3,257,658.07 (ft)
Y = 4,923,734.065 (vrs)
X = 1,172,756.905 (vrs)

N 01°21'35" E — 23,320.93'
HGCSD 60

Y = 13,673,367.40 (ft)
X = 3,253,737.47 (ft)
Y = 4,922,412.264 (vrs)
X = 1,171,345.489 (vrs)

TEXAS GENERAL LAND OFFICE
Art. 33.136, Natural Resources Code
Co. Galveston Sketch No. 2.5
File Date: 3-16-2004 by D.J.H.

LINE	U.S. SURVEY FEET	VARAS	BEARING
L1	152.66 (ft)	54.958 (vrs)	N 43°14'04" E
L2	12.39 (ft)	4.460 (vrs)	N 03°00'44" E
L3	26.01 (ft)	9.364 (vrs)	N 68°10'20" E
L4	85.81 (ft)	30.892 (vrs)	N 36°12'00" E
L5	101.39 (ft)	36.500 (vrs)	N 75°51'13" E
L6	31.07 (ft)	11.185 (vrs)	S 61°32'18" E
L7	66.37 (ft)	23.893 (vrs)	S 38°01'17" E
L8	139.63 (ft)	50.267 (vrs)	S 78°26'04" E
L9	143.96 (ft)	51.826 (vrs)	N 82°45'38" E
L10	98.72 (ft)	35.539 (vrs)	N 74°11'31" E
L11	474.73 (ft)	170.903 (vrs)	N 67°39'28" E
L12	82.00 (ft)	29.520 (vrs)	N 50°21'13" E
L13	87.80 (ft)	31.608 (vrs)	N 63°56'24" E
L14	275.39 (ft)	99.140 (vrs)	N 81°07'35" E
L15	49.63 (ft)	17.867 (vrs)	N 88°27'55" E
L16	56.74 (ft)	20.426 (vrs)	N 70°05'45" E
L17	191.57 (ft)	68.965 (vrs)	N 53°05'07" E
L18	20.05 (ft)	7.218 (vrs)	N 17°32'37" E
L19	45.51 (ft)	16.384 (vrs)	N 27°13'54" W
L20	99.81 (ft)	35.932 (vrs)	N 24°44'56" E
L21	84.01 (ft)	30.244 (vrs)	N 72°32'03" E
L22	40.24 (ft)	14.486 (vrs)	N 21°16'02" E
L23	111.14 (ft)	40.010 (vrs)	N 55°52'14" E
L24	112.04 (ft)	40.334 (vrs)	N 27°32'23" E
L25	17.68 (ft)	6.365 (vrs)	N 29°08'11" W
L26	27.12 (ft)	9.763 (vrs)	N 10°55'46" E
L27	107.70 (ft)	38.772 (vrs)	N 26°55'18" E
L28	174.86 (ft)	62.950 (vrs)	N 32°46'05" E
L29	127.25 (ft)	45.810 (vrs)	N 38°05'39" E
L30	202.41 (ft)	72.868 (vrs)	N 43°01'26" E
L31	15.95 (ft)	5.742 (vrs)	N 65°35'18" E
L32	39.43 (ft)	14.195 (vrs)	S 81°53'07" E
L33	105.57 (ft)	38.005 (vrs)	N 07°17'00" W

LINE	U.S. SURVEY FEET	VARAS	BEARING
L34	187.46 (ft)	67.486 (vrs)	N 29°46'39" E
L35	73.88 (ft)	26.597 (vrs)	N 41°36'22" E
L36	9.65 (ft)	3.474 (vrs)	N 41°49'52" E
L37	308.79 (ft)	111.164 (vrs)	N 59°30'00" E
L38	230.84 (ft)	83.102 (vrs)	N 61°20'09" E
L39	155.95 (ft)	56.142 (vrs)	N 64°24'38" E
L40	120.45 (ft)	43.362 (vrs)	N 57°49'08" E
L41	124.24 (ft)	44.726 (vrs)	N 51°09'23" E
L42	189.53 (ft)	68.231 (vrs)	N 36°01'02" E
L43	108.40 (ft)	39.024 (vrs)	N 27°48'29" E
L44	24.30 (ft)	8.748 (vrs)	N 00°45'09" E
L45	28.00 (ft)	10.080 (vrs)	N 60°24'30" E
L46	40.69 (ft)	14.648 (vrs)	N 34°28'11" E
L47	62.74 (ft)	22.586 (vrs)	N 49°58'13" E
L48	55.20 (ft)	19.872 (vrs)	N 76°12'58" E
L49	34.22 (ft)	12.319 (vrs)	N 50°44'44" E
L50	25.89 (ft)	9.320 (vrs)	N 21°10'04" E
L51	91.64 (ft)	32.990 (vrs)	N 60°06'48" E
L52	92.76 (ft)	33.394 (vrs)	N 28°26'19" E
L53	55.38 (ft)	19.937 (vrs)	N 10°42'13" E
L54	26.42 (ft)	9.511 (vrs)	N 74°37'43" E
L55	60.40 (ft)	21.744 (vrs)	N 35°17'23" E
L56	47.19 (ft)	16.988 (vrs)	N 36°07'57" W
L57	59.63 (ft)	21.467 (vrs)	N 51°41'59" E
L58	147.20 (ft)	52.992 (vrs)	N 70°20'42" E
L59	102.13 (ft)	36.767 (vrs)	N 07°45'30" E
L60	49.41 (ft)	17.788 (vrs)	N 32°22'18" W
L61	139.18 (ft)	50.105 (vrs)	N 11°43'23" W
L62	68.23 (ft)	24.563 (vrs)	N 01°14'31" E
L63	64.50 (ft)	23.220 (vrs)	N 21°11'14" E
L64	103.27 (ft)	37.177 (vrs)	N 60°34'11" E
L65	81.11 (ft)	29.200 (vrs)	N 46°40'11" W
L66	70.67 (ft)	25.441 (vrs)	N 62°33'17" W

NOTES:

ALL BEARINGS ARE LAMBERT GRID BEARINGS AND ALL COORDINATES REFER TO THE STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, AS DEFINED BY ARTICLE 21.071 OF THE NATURAL RESOURCES CODE OF THE STATE OF TEXAS, 1983 DATUM (1993 ADJUSTMENT). COORDINATES LISTED ARE BASED ON SURFACE COORDINATES AND DISTANCES SHOWN HEREON ARE SURFACE DISTANCES. ALL DISTANCES SHOWN HEREON MAY BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.999863486.

ALL MEANDER POINTS SHOWN HEREON ARE ON THE LINE OF MEAN HIGH WATER AS DETERMINED ON AUGUST 17, 1999. FOR REFERENCE ONLY THE LINE OF MEAN HIGH WATER WHEN RELATED TO NAVD 88, 1995 ADJUSTMENT ELEVATION IS COMPUTED AT 0.97 FEET, USING THE NGS BENCHMARK NUMBER "HGCSD 60", HAVING A PUBLISHED ELEVATION OF 5.25 FEET.NAVD 88, 1995 ADJUSTMENT.

NOTICE:

This survey was performed in accordance with Section 33.136, Natural Resources Code, for the purpose of evidencing the location of the shoreline in the area depicted in this survey as that shoreline existed before commencement of erosion response activity, as required by Chapter 33, Natural Resources Code. The meander line depicted on this survey fixes the shoreline for the purpose of locating a shoreline boundary, subject to movement landward as provided by Section 33.136, Natural Resources Code.

File No. NRC Art.33.136 Sketch 25
Galveston County
Date Filed: March 16, 2004
Jerry Patterson, Commissioner
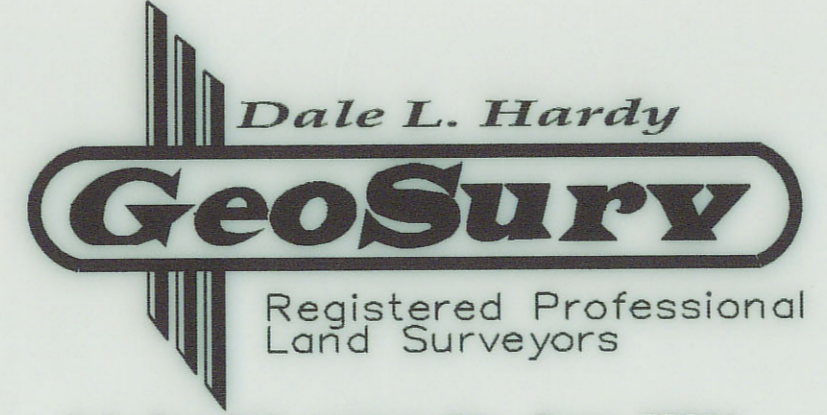By Douglas Howard
See Report No. 17

I, WILLIAM E. MERTEN, LICENSED STATE LAND SURVEYOR IN AND FOR THE STATE OF TEXAS, DO HEREBY CERTIFY THAT ON AUGUST 17, 1999, I HAVE LOCATED THE NATURAL CONTOUR LINE OF MEAN HIGH WATER ON THE GROUND, ACCORDING TO LAW AND WITH THE PERSONNEL STATED, AND THAT THE MEANDERS OF SAID CONTOUR LINE ARE TRUE AND CORRECT AS SHOWN HEREON, TO THE BEST OF MY KNOWLEDGE, NO ARTIFICIAL FILL OR ANY DEVELOPMENT, OTHER THAN THE CONCRETE HEADWALL STRUCTURES, THAT WOULD CAUSE ALTERATION TO SAID CONTOUR LINE HAS OCCURRED WITHIN THE AREA SURVEYED, REFERENCE IS HEREBY MADE TO THE ACCOMPANYING REPORT BY ME OF THE SAME DATE.

FIELD PERSONNEL:
DALE L. HARDY (RPLS #4847)
A. MONROE KELSAY (SIT)
MALCOLM COMEAUX

WILLIAM E. MERTEN
LICENSED STATE LAND SURVEYOR

HALFF ASSOCIATES, INC.
3701 KIRBY DRIVE (SUITE 1290)
HOUSTON, TEXAS 77098
(713) 523-7161

07/15/02

Dale L. Hardy
GeoSurv
Registered Professional Land Surveyors

P.O. Box 246, League City, Texas 77574
281-554-7739 409-765-6030 Fax: 281-554-6928

OWNERS:
FLAMINGO ISLES, LLC
1906 LaSalle
League City, Texas 77573

Galveston Co. NRC Art.33.136 Sketch 25

Halff Associates

ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

3701 KIRBY DRIVE, SUITE 1290
HOUSTON, TEXAS 77098
(713) 523-7161
FAX (713) 523-4373

July 19, 2002

Mr. Ben Thomson, RPLS, LSLS
Texas General Land Office
Surveying Division
1700 N. Congress Avenue
Austin, Texas 78701

TEXAS GENERAL LAND OFFICE
Art. 33.136, Natural Resources Code

Co. Galveston , Report No. 17

File Date 3-16-2004 by D.J.H.

Re: Flamingo Isle, West Bay of Galveston Bay, Galveston County, Texas

Dear Ben,

At the request of Mr. Lynn B. Watkins, enclosed please find the original and 1 blueline copy of a survey of the above referenced site to be filed in the records of the General Land Office. Also enclosed is the original and 1 copy of the accompanying Surveyors Report to be filed with the Survey.

If you have any questions or need further information, please do not hesitate to give me a call.
Thank you.

Sincerely,

William E. Merten, RPLS, LSLS
Director of Surveying - Houston

Cc: Mr. Lynn B. Watkins

File No. NRC Art. 33.136 Report Sketch 25 Sketch 17

Galveston ————— County

Accompanying NRC Art. 33.136 Sketch 25

Date Filed: March 16, 2004

Jerry Patterson, Commissioner

By Douglas Howard

HOUSTON • DALLAS • FORT WORTH • McALLEN

TRANSPORTATION • WATER RESOURCES • LAND DEVELOPMENT • MUNICIPAL • ENVIRONMENTAL • STRUCTURAL
MECHANICAL • ELECTRICAL • SURVEYING • GEOGRAPHIC INFORMATION SYSTEMS
ARCHITECTURE • LANDSCAPE ARCHITECTURE • PLANNING

Galveston Co. NRC Art. 33.136 Report 17 sht. 1 of 3
Sketch 25
counter # 81909

SURVEYORS REPORT
ESTABLISHMENT OF MEAN HIGH WATER
FOR FLAMINGO ISLE SUBDIVISION
GALVESTON COUNTY, TEXAS

At the request of Mr. Dale L. Hardy, R.P.L.S., of Dale L. Hardy and Associates, in my capacity as a Licensed State Land Surveyor in Texas, I have determined the line of Mean High Water for Flamingo Isle Subdivision located in the R. M. Breckenridge Survey, (General Land Office Galveston County File Number 3.17), Galveston County, Texas.

The R. M. Breckenridge Survey is located on the northwest coast of the West Bay of Galveston Bay with the James Spillman Survey (GLO Galveston County File Number 1.6) adjoining to the northeast and the Alexander Ramsey Survey (GLO Galveston County File Number 3.49) adjoining to the southwest. All three surveys were located during the month of April, 1847 by Samuel P. Brown, Deputy District Surveyor for Galveston County.

The project area is located along the entire coastal frontage of the Breckenridge Survey. Flamingo Isle Subdivision, recorded in Volume 1616, Page 90, of the Galveston County Deed Records, includes of a series of canals that were dredged in the 1960's and shortly after the development was abandoned. Aerial photographs were obtained for the periods just prior to, during and after the dredging operations and confirmed that except at the canal entrances to the Bay, the dredging operations did not affect the configuration of the coastline. The photos also confirmed that prior to the dredging operations there existed no drainage outlets, bayous or creeks emptying into the Bay along the project frontage.

In a decision by the Texas Supreme Court in the case of Luttes vs. State (324 SW 2nd 167, on remand 328 SW 2nd 920) it was found that littoral boundaries can be determined by the use of the tides and that the boundary for Common Law Grants will be at the line of Mean High Water. Tides being defined as the regular and predictable rise and fall in sea level due to the gravitational pull of the sun and moon, and the line of Mean High Water being defined as a tidal datum that is the average of all high tides observed over a specific 19 year period (epoch). Finally, the Luttes case described the best method of determining the line of Mean High Water is to employ the use of scientific tide gauges.

The tide is the regular and predictable rise and fall in sea level mainly due to the gravitational pull of the Sun and Moon. Also, sea levels are influenced by weather conditions, geographical location and topography of the coastline. The combination of these conditions can result in a wide variation in the elevation of the tidal datum from location to location. Due to this variation, datum's will have to be determined at the project location. Because of the impracticality of obtaining 19 years of tide readings at a specific location, methods have been developed to correct short term readings at an onsite tide gauge to the datum at a primary tide gauge (a gauge in operation for more than 19 years).

Tide gauges along the Texas coastline are installed, operated and maintained by a joint effort involving the National Oceanic and Atmospheric Administration (NOAA), the Conrad Blucher Institute (CBI) and Lamar University. Each Tide Gauge has several Gauge Benchmarks which are referenced to gauge datum and relationships between the Gauge Benchmarks and Mean Lower Low Water/Mean High Water is established. Tidal datum's, benchmarks and gauge readings are published and available from NOAA and CBI.
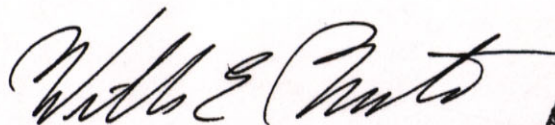
I was fortunate that the project site was in the general vicinity of the Galveston Pier 21 Tide Gauge, a primary gauge in use since 1908, in that short term onsite tide readings could be compared directly to the primary tide gauge readings. The current tidal datum for the Pier 21 Gauge was obtained from NOAA and CBI and is based on a 5 year series ending in 1994 as applied to the 1960-1978 National Tidal Datum Epoch.

A staff gauge was installed near the northeasterly canal entrance to the Bay and tide levels were observed on six minute intervals through three high tide cycles. The staff gauge readings were compared simultaneously with the six minute readings at the Pier 21 Tide Gauge. Using the Amplitude Ratio Method between the Pier 21 Tide Gauge and the Flamingo Isle staff gauge, mean high water was calculated for our project area. For reference only the line of mean high water when related to North American Vertical Datum 88 (NAVD 88), 1995 adjustment elevation is computed at 0.97 feet when using NGS Benchmark Number "HGCSD 60", having a published elevation of 5.25 (NAVD 88, 1995 adjustment).

On August 17, 1999, with site benchmarks in place, points reflecting the line of Mean High Water were located horizontally and vertically on the ground. The points located were on the natural contour line of Mean High Water along the West Bay of Galveston Bay for approximately 6000 feet. These points were incorporated into surveyed meanders delineating the littoral boundary between the state owned seabed and privately owned uplands.

A plat showing the results of this survey was prepared and filed with this report.

Respectfully submitted,

William E. Merten
Licensed State Land Surveyor
1448 Silverpines
Houston, Texas 77062
(281) 488-0460
August 30, 1999