

Drainage plan
approved by Greg
Kohnen.

APPROVED

Plat Name: GALLOWAY AT SPANISH COVE

Project #: 1903120049

OSSF Feasibility Study Checklist

- For a subsurface disposal system only, show replacement (expansion) area in feasibility study **x** done
- For platted residential lots: minimum 1 acre for private water well and private septic; minimum ½ acre for public water and private septic **x** done
- A sealed property survey (copy of plat is sufficient) **x** done
- Site exhibit showing the location of the soil bore hole. One is sufficient for a feasibility study. **x** done
- A topographic map on one-foot (1') contours (Google map acceptable if no change in contour) **x** done
- A Federal Emergency Management Agency Flood Plain Map (FEMA 100 year flood) with the site delineated to scale **x** done
- A NRCS-USDA soil survey map with the site located to scale **x** done
- The location of adjacent water wells within 150 feet of the property and proposed water wells **x** done
- Verification of setbacks, as identified in §285.91 (10) of this title (relating to Tables) **x** done
- A comprehensive drainage plan complying with the minimum Harris County Flood Control District criteria or the Harris County Regulations for Approval and Acceptance of Infrastructure as appropriate (Greg needs to approve beforehand) **x** *done by email*
- A complete report detailing the types of OSSF's to be considered and their compatibility with area-wide drainage and groundwater. **x** done
- If the proposed development includes restaurants or buildings with food service establishments, the planning materials must show adequate land area for doubling the land needed for the treatment units. **x** done
- Sanitary Control Easement **x** done

February 4, 2019

Harris County Public Infrastructure
Wastewater Division
10555 NW Freeway, Ste. 120
Houston, TX 77092

RE: Feasibility Study For:
Galloway Lone Star, LLC
1103 Vera Cruz St.
Crosby, TX 77532

To Whom It May Concern:

Attached for your consideration is a study of the proposed subdivision located at 1103 Vera Cruz Street, Crosby, TX 77532. Based on the materials presented in the study, it is my professional opinion that the subject property is suitable to be serviced by an on-site sewage facility and private well, if guidelines outlined in the study are followed.

It is my recommendation, that this study be approved so that platting can be completed.

If you have any questions regarding this matter please feel free to contact me at 936-672-7025.

Thank you,



Codi Waneck
Registered Sanitarian



February 4, 2019

Harris County Public Infrastructure
10555 NW Freeway, Ste. 120
Houston, TX 77340

RE: Feasibility Study For:
Galloway Lone Star, LLC
1103 Vera Cruz St.
Crosby, TX 77532

To Whom It May Concern:

The following study is presented to determine the suitability of on-site sewage facility and disposal system for a proposed subdivision located in Harris County. The site consists of 1.1726 acres situated in the FH Rankin League Survey, Abstract 57. The property is located at the end of Vera Cruz St. approximately 577 feet from El Matador St. This study contains a map showing the property location. The said property is not within any city limits. Adjacent properties are established and vacant residential properties.

This property is flat and heavily wooded. The area is residential developments. Properties in the area are on public water and on-site sewage facilities. This development is not within a hazardous flood zone per FEMA Map 48201C0530L dated 06/18/2007; therefore it is not required for tanks to be installed to avoid flotation and electrical components to be raised to insure failure is avoided in a flood situation.

The land will consist of 1 Block containing 1 Lot belonging to Galloway Lone Star, LLC. The lot consists of 1.1726 acres. The development has approximately 75 feet of frontage to Vera Cruz Street and will have private driveway access to Vera Cruz Street.

The recommendations presented as a result of this study are based on an evaluation of local soils by on-site testing and as outlined in the "Soil Survey for Harris County", evaluation of drainage and flood conditions per USCG maps, FEMA firm panels and on-site sewage suitability based on standards outlined in Title 30, Texas Administrative Code, Chapter 285 "On-Site Sewage Facilities" Revised December 27, 2012.

Thank you,



Codi Waneck
Registered Sanitarian



GENERAL

The subject property consists of 1 tract of land totaling 1.1726 acres currently known as:

Tracts 7P in the FH Rankin Survey, Abstract 57.

The property is located in the north eastern portion of Harris County. The lot is in the FH Rankin Survey, Abstract 57 in Harris County, Texas. This study contains a map showing the location of said property. The property is located at 1103 Vera Cruz Street, Crosby, Texas 77352. The said property is not within any city limits.

This area is flat and heavily wooded. Topography can be seen on the attached topo map. The property is being used as residential development. This development is not within a hazardous flood zone per FEMA Map 48201C0530L dated 06/18/2007.

Surrounding properties are residential developments served by public water and on-site sewage facilities.

DEVELOPMENT

The lot will have private entry driveways. Property is suitable for residential development served by an on-site sewage facility with public water service. The individual septic design & permitting is the responsibility of the developer/landowner. Drainage for property will be to the rear drainage ditch as shown on site/drainage plan.

WATER SUPPLY

The lot will be served by the public water supplier Spanish Cove Water Supply. Public water lines must meet minimum separation distances set forth in Title 30, TAC Chapter 285, Table X.

There must be a separation distance of 10' from any septic tank and 10' from disposal areas from public water lines. Proposed water meter and lines shown on attached site plan. No wells are within 150' of the property. ✓



WASTEWATER TREATMENT AND DISPOSAL

It has been determined that an individual on-site wastewater treatment system is feasible for the said lot. A site evaluation and septic design will be required on any new development; however this study reflects the type of system(s) and general location of the system(s) to be installed. This determination is based on soil borings, drainage analysis and overall conditions of the property in general.

Soil bores were made at several locations throughout the property. Test holes were made in the general areas where the septic installation could be located. Soil evaluation is discussed later in this presentation.

Based on soil samples studied, the development will require the installation of Non-standard treatment systems with secondary treatment. The system specified for the proposed lots is an Aerobic Wastewater Treatment System with surface application. This property is also a candidate for a drip irrigation disposal system.

The determining factor for surface application disposal system is generally the area available for disposal. Surface application must be 10' from any public or private water lines unless properly sleeved according to Title 30, TAC Chapter 290; 10' from property lines (with commercial timer), and must be in an area that will inhabit vegetation.

Discharge from A/C units or water runoff from buildings are not be allowed to enter the on-site wastewater system. Such discharges interfere with the biologic processes and cause a hydraulic overload of the treatment system.

SIZING WASTEWATER SYSTEMS

Sizing of an on-site wastewater system is detailed in TCEQ manual "Title 30, Texas Administrative Code, Chapter 285, On Site Sewage Facilities" latest edition December 27, 2012; or any other method approved by permitting authority. Sizing is based on a number of factors such as but not limited to; number of bedrooms and square footage of living area.

Chlorination is commonly provided with tablet feeders using chlorine tablets specified for wastewater usage; however liquid chlorinators are available for use. The pump tank is a holding tank, which is designed to hold a 24-hour usage plus one third of daily usage for reserve.



The surface application area is designed by dividing the maximum daily volume by the loading capacity designated by TCEQ application rates. In this area 0.041 gallons per square foot is the designated application rate. Surface application must be clear within 10 foot of trees and underbrush and must also support natural vegetation. Pump tank will require visual/audible high level alarm and over-ride float for times with high usage.

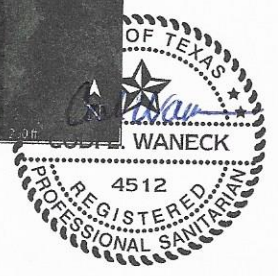
Disposal area shall be a minimum of 10 feet from public water lines. Aerobic wastewater systems are installed with a two-year warranty and service contract. It is the responsibility of the land owner to have a continuing service contract in effect for the life of the system. The approved service company will make quarterly or monthly inspections (as required), with reports to the owner and Harris County.

SOIL EVALUATION

The soil in the area is primarily Viterbo in association and classified as a type IV soil. These formations are flat, hard, somewhat poorly drained, very slow permeable, and grey brown to grey in color. Seasonal ground water is approximately 12 inches in depth.

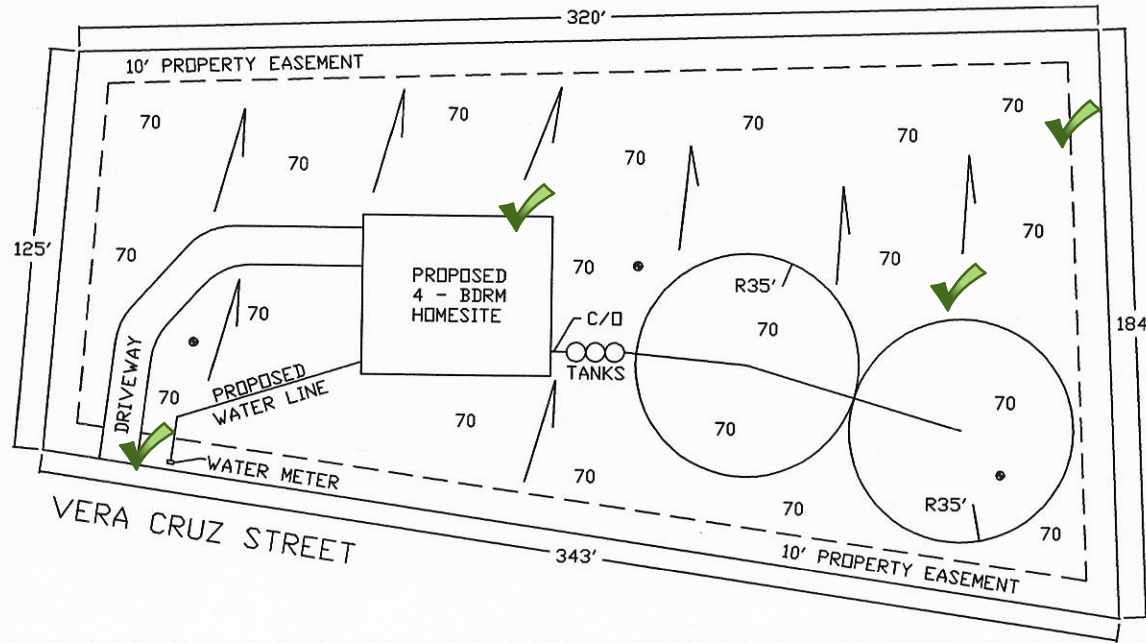
Soil tests generally follow the soil properties described in the USDA "Soil Survey for Harris County". The structure of the soil tends to be moderate subangular blocky, very hard with indications of clay below 12 inches.

Aerial Map



NO FLOOD HAZARD PER FIRM PANEL 530 L
SLOPE PATTERN = FLAT

* THIS DESIGN IS A PROPOSAL FOR FEASIBILITY STUDY PURPOSES ONLY.
ACTUAL DESIGN TO BE SUBMITTED AT LATER DATE.



CALCULATION SUMMARY:

TOTAL NUMBER OF BEDROOMS: 4 (UNDER 3,500 SQ.F.T.)
 Q = 300 G.P.D. (375 GPD MINUS 25% FOR USE OF L.F.F.)
 APPLICATION RATE: 0.041 gal./sq.ft./DAY
 TOTAL SPRAY AREA REQUIRED = 7,317 sq.ft.
 TOTAL SPRAY AREA DESIGNED = 7,693 sq.ft.
 INSTALL 2 PURPLE TOP SPRAY HEADS WITH APPROPRIATE LOW ANGLE NOZZLES
 HEADS SHALL NOT EXCEED 40 P.S.I. WITH INSTALLED NOZZLES TO SPRAY A 35'R
 SPRINKLER TIMER SHALL BE SET TO SPRAY BETWEEN MIDNIGHT AND 5:00 A.M.
 INSTALL A 1/2 H.P. PRO FLD 20 G.P.M. SUBMERSIBLE PUMP (OR EQUAL)
 DESIGN BASED ON FINDINGS BY SITE EVALUATOR

LEDGEND:

- TANKS = 500 gal. PRETREATMENT TANK
 500 G.P.D. AEROBIC TREATMENT UNIT
 750 gal. PUMP TANK W/CHLORINATOR
- C/O = 2 WAY CLEAN-OUTS AT ALL STUB-OUTS FROM HOUSE
 1 WAY CLEAN-OUTS EVERY 50' AND AT EVERY 90'
 TURN IN DIRECTION
- = BORE HOLE SITE



NAME: GALLOWAY LONE STAR, LLC	SURVEY: FH RANKIN	DESIGNER: BRANDI SAINZ / WANECK
ADDRESS: 1103 VERA CRUZ STREET	ABSTRACT: 57	PHONE #: (936) 672-0656
CITY, STATE, ZIP: CROSBY, TX 77352	LDT: 1	EMAIL: brandi@whonaturecalls.com
SUBDIVISION: GALLOWAY AT SPANISH COVE	BLOCK: 1	DATE: 02-04-19
COUNTY: HARRIS	SECTION: N/A	SCALE: 1" = 60'

HARRIS COUNTY APPRAISAL DISTRICT
 REAL PROPERTY ACCOUNT INFORMATION
 0410130020249

Tax Year: 2019



Owner and Property Information								
Owner Name & Mailing Address: GALLOWAY LONE STAR LLC 9307 HUFSMITH RD TOMBALL TX 77375-2617				Legal Description: TR 7P ABST 57 F H RANKIN 0 VERA CRUZ ST CROSBY TX 77532				
Property Address: 0 VERA CRUZ ST CROSBY TX 77532								
State Class Code	Land Use Code	Land Area	Total Living Area	Neighborhood	Neighborhood Group	Market Area	Map Facet	Key Map®
C3 -- Real, Vacant Lots/Tracts (Not in City)	1000 -- Residential Vacant	50,179 SF	0 SF	2175.07	30305	440 -- ISD 30 - Huffman ISD	6067A	338Z

Value Status Information	
Value Status	Shared CAD
All Values Pending	No

Exemptions and Jurisdictions						
Exemption Type	Districts	Jurisdictions	Exemption Value	ARB Status	2018 Rate	2019 Rate
None	030	HUFFMAN ISD	Pending	Pending	1.400000	
	040	HARRIS COUNTY	Pending	Pending	0.418580	
	041	HARRIS CO FLOOD CNTRL	Pending	Pending	0.028770	
	042	PORT OF HOUSTON AUTHY	Pending	Pending	0.011550	
	043	HARRIS CO HOSP DIST	Pending	Pending	0.171080	
	044	HARRIS CO EDUC DEPT	Pending	Pending	0.005190	
	674	HC EMERG SRV DIST 4	Pending	Pending	0.099560	
	826	SPANISH COVE PUD	Pending	Pending	0.684000	

Texas law prohibits us from displaying residential photographs, sketches, floor plans, or information indicating the age of a property owner on our website. You can inspect this information or get a copy at [HCAD's information center at 13013 NW Freeway](#).

Valuations			
Value as of January 1, 2018		Value as of January 1, 2019	
	Market	Appraised	
Land	39,735		Land
Improvement	0		Improvement
Total	39,735	39,735	Total
			Pending
			Pending

Land												
Market Value Land												
Line	Description	Site Code	Unit Type	Units	Size Factor	Site Factor	Appr O/R Factor	Appr O/R Reason	Total Adj	Unit Price	Adj Unit Price	Value
1	1000 -- Res Vacant Table Value	SF5	SF	29,290	1.00	1.00	1.00	--	1.00	Pending	Pending	Pending
2	1000 -- Res Vacant Table Value	SF3	SF	20,889	1.00	0.50	1.00	--	0.50	Pending	Pending	Pending

Building
 Vacant (No Building Data)

National Flood Hazard Layer FIRMette



29°59'48.49"N

95°6'40.68"W



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | | |
|-----------------------------|--|--|
| SPECIAL FLOOD HAZARD AREAS | | Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i> |
| | | With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> |
| | | Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> |
| | | Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> |
| | | Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> |
| | | Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | | Area of Minimal Flood Hazard <i>Zone X</i> |
| | | Effective LOMRs |
| | | Area of Undetermined Flood Hazard <i>Zone D</i> |
| GENERAL STRUCTURES | | Channel, Culvert, or Storm Sewer |
| | | Levee, Dike, or Floodwall |
| OTHER FEATURES | | 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation |
| | | 17.5 Coastal Transect |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |
| | | Limit of Study |
| | | Jurisdiction Boundary |
| OTHER FEATURES | | Coastal Transect Baseline |
| | | Profile Baseline |
| | | Hydrographic Feature |
| MAP PANELS | | Digital Data Available |
| | | No Digital Data Available |
| | | Unmapped |
- The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/28/2019 at 11:15:03 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

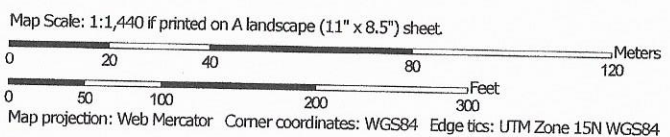
USGS The National Map: Orthoimagery. Data refreshed October, 2017.

0 250 500 1,000 1,500 2,000 Feet 1:6,000

29°59'17.33"N

95°6'32.22"W

Soil Map—Harris County, Texas



Harris County, Texas

VirA—Viterbo silty clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2thpp

Elevation: 10 to 100 feet

Mean annual precipitation: 48 to 62 inches

Mean annual air temperature: 68 to 72 degrees F

Frost-free period: 270 to 300 days

Farmland classification: Not prime farmland

Map Unit Composition

Viterbo and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Viterbo

Setting

Landform: Flats

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 7 inches: silty clay loam

Btg1 - 7 to 17 inches: silty clay loam

Btg2 - 17 to 35 inches: silty clay

Btssg - 35 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 2 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 2.0

Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w

Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: Yes

Minor Components

Labelle

Percent of map unit: 7 percent
Landform: Flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: No

Levac

Percent of map unit: 2 percent
Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: No

Orcadia

Percent of map unit: 1 percent
Landform: Flats
Landform position (three-dimensional): Rise
Microfeatures of landform position: Bars
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Harris County, Texas
Survey Area Data: Version 19, Sep 14, 2018

LOCATION VITERBO TX

Established Series
RD-CLN-RM
07/2014

VITERBO SERIES

The Viterbo series consists of very deep, somewhat poorly drained, very slowly permeable soils. These nearly level soils formed in loamy fluviomarine deposits derived from the Beaumont Formation. Slope ranges from 0 to 1 percent. Mean annual air temperature is about 20.6 degrees C (degrees 69 F), and mean annual precipitation is about 1397 mm (55 in).

TAXONOMIC CLASS: Fine, smectitic, hyperthermic Chromic Vertic Epiaqualfs

TYPICAL PEDON: Viterbo silty clay loam--cropland.(Colors for moist soil unless otherwise stated.)

Ap--0 to 18 cm, (0 to 7 in); grayish brown (10YR 5/2) silty clay loam; weak medium subangular blocky structure; hard, firm; common fine roots; 1 percent fine prominent strong brown (7.5YR 4/6) masses of oxidized iron with sharp boundaries along roots; few wormcasts; very strongly acid; clear smooth boundary. (13 to 30 cm [5 to 12 in] thick)

Btg1--18 to 43 cm, (7 to 17 in); grayish brown (10YR 5/2) silty clay loam; moderate medium subangular blocky structure; very hard, firm; common fine roots; few fine pores; few distinct dark grayish brown (10YR 4/2) clay films; 10 percent crawfish krotovina; 8 percent fine distinct yellowish brown (10YR 5/6) masses of oxidized iron with clear boundaries lining pores; 5 percent fine prominent red (2.5YR 4/6) masses of oxidized iron lining root channels with sharp boundaries; very strongly acid; gradual wavy boundary. (14 to 66 cm [6 to 26 in] thick)

Btg2--43 to 89 cm, (17 to 35 in); gray (10YR 5/1) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, very firm; few fine roots; few fine pores; few distinct dark grayish brown (10YR 4/2) clay films; few pressure faces; 10 percent crawfish krotovina; 12 percent fine prominent yellowish brown (10YR 5/6) masses of oxidized iron with clear boundaries lining pores; 5 percent fine prominent strong brown (7.5YR 4/6) masses of oxidized iron lining roots channels; strongly acid; gradual wavy boundary. (24 to 60 cm [9 to 24 in] thick)

Btssg1--89 to 165 cm, (35 to 65 in); gray (10YR 6/1) clay; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm; few fine roots; few distinct clay films; common distinct slickensides; 10 percent crawfish krotovina; 15 percent fine prominent yellowish brown (10YR 5/6) masses of oxidized iron with clear boundaries lining pores; 5 percent fine prominent strong brown (7.5YR 4/6) masses of oxidized iron with sharp boundaries lining pores; strongly acid; gradual wavy boundary. (combined thickness of the Btssg horizons is 72 to 127 cm [28 to 50 in])

Btssg2--165 to 203 cm, (65 to 80 in); light gray (10YR 7/1) clay; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, very firm; few faint clay films; common distinct slickensides; few crawfish krotovina; 10 percent fine prominent yellowish brown (10YR 5/6) masses of oxidized iron with diffuse boundaries; strongly acid.

TYPE LOCATION: Jefferson County, Texas; from the intersection of Interstate Highway 10 and U.S. Highways 69, 96, and 287 in southwest Beaumont; 3.6 miles east on U.S. Highways 69, 96, and 287; 3.1 miles southeast on the West Port Arthur Road; 0.5 mile east on FM 517; 600 feet south of road and 200 feet east of canal. (Port Acres USGS quad; Latitude: 29 degrees, 59 minutes, 21 seconds; Longitude: 94 degrees, 03 minutes, 28 seconds; WGS84)

RANGE IN CHARACTERISTICS:

Soil Moisture: An aquic soil moisture regime.

Mean annual soil temperature: 21.7 to 22.2 degrees C (71 to 72 degrees F)

Particle-size control section (weighted average)

Clay content: 35 to 45 percent

Ap (A where present) Horizon

Hue: 10YR or 2.5Y

Value: 4 or 5

Chroma: 1 or 2

Texture: silt loam, loam, silty clay loam or clay loam

Clay content: 17 to 36 percent

Redox concentrations: amount-1 to 5 percent, location-lining roots and pores, shades-brown

Redox depletions: amount-0 to 5 percent, location-adjacent to redox concentrations, shades-gray

Electrical Conductivity (mmhos/cm): 0 to 2

Sodium Adsorption Ratio: 0 to 4

Reaction: very strongly acid to moderately acid

Btg Horizon

(upper part

Hue: 10YR or 2.5Y

Value: 4 to 6

Chroma: 1 or 2

Texture: silty clay loam, clay loam, clay, or silty clay
 Clay content: 27 to 50 percent
 Redox concentrations: amount-5 to 15 percent, location-lining roots and pores, shades-brown, red, or yellow
 Redox depletions: amount-0 to 5 percent, location-adjacent to redox concentrations, shades-gray
 Electrical Conductivity (mmhos/cm): 0 to 2
 Sodium Adsorption Ratio: 0 to 6
 Reaction: very strongly acid to slightly acid

Btg Horizon
 (lower part)

Hue: 10YR or 2.5Y

Value: 5 to 7

Chroma: 1 or 2

Texture: silty clay loam, clay loam, silty clay, or clay

Clay content: 37 to 52 percent

Redox concentrations: amount-5 to 25 percent, location-lining roots and pores, shades-brown, red, or yellow (red redox concentrations are less than 20 percent)

Redox depletions: amount-0 to 5 percent, location-adjacent to redox concentrations, shades-gray

Electrical Conductivity (mmhos/cm): 0 to 2

Sodium Adsorption Ratio: 0 to 6

Reaction: very strongly acid to neutral

Btssg Horizons

Hue: 10YR to N

Value: 5 to 7

Chroma: 1 or 2

Texture: silty clay or clay

Clay content: 41 to 55 percent

Redox concentrations: amount-5 to 25 percent, location-lining roots and pores, shades-brown, red, or yellow (red redox concentrations are less than 20 percent)

Redox depletions: amount-0 to 5 percent, location-adjacent to redox concentrations, shades-gray

Electrical Conductivity (mmhos/cm): 0 to 2

Sodium Adsorption Ratio: 0 to 6

Reaction: very strongly acid to slightly alkaline

COMPETING SERIES: These are the [Baldwin](#) (LA) and [Verland](#) (TX) series. Similar soils are the [Aris](#) (TX), [Evadale](#) (TX), [Leton](#) (TX) and [Mowata](#) (LA) series.

[Baldwin](#) soils: have a lithologic discontinuity

[Verland](#) soils: are more alkaline in the lower part of the argillic horizon

[Aris](#) soils: are in a fine-silty family

[Evadale](#) soils: fine-silty family; thermic temperature regime

[Leton](#) soils: fine-silty family; have a glossic horizon

[Mowata](#) soils: have a glossic horizon; thermic temperature regime

GEOGRAPHIC SETTING:

Parent material: loamy fluviomarine sediments derived from the Beaumont Formation of Pleistocene age

Landscape: flat coastal plains

Landform: flats

Slope: 0 to 1 percent

Mean annual air temperature range: 20.0 to 22.2 degrees C (68 to 72 degrees F)

Mean annual precipitation range: 1219 to 1575 mm (48 to 62 in)

Precipitation Pattern: Rainfall is fairly uniform throughout the year with slight peaks in the fall and spring months.

Frost-free period: 270 to 300 days

Elevation: 3 to 30.5 m (10 to 100 ft)

GEOGRAPHICALLY ASSOCIATED SOILS: These are the [Anahuac](#) (TX), [Labelle](#) (TX), [Levac](#) (TX), [Orcadia](#) (TX), [Meaton](#) (TX), [Morey](#) (TX), and [Spindletop](#) series.

[Anahuac](#) and [Orcadia](#) soils: are on a broader landform

[Labelle](#) and [Morey](#) soils: somewhat poorly drained; on flats

[Levac](#) soils- somewhat poorly drained; are truncated pimple mounds

[Spindletop](#) soils: moderately well drained; on pimple mounds

DRAINAGE AND PERMEABILITY: somewhat poorly drained; runoff is high; permeability is very slow; rarely flooded for very brief to brief periods. Flooding occurs as a result of storm surge during tropical storms which occurs in areas less than 4.6 m (15 ft) elevation. These soils have episaturation from the soil surface to 152 cm (0 to 60 in) from January to March in normal years

USE AND VEGETATION: Used for pasture or rice production. Native grasses include species of andropogon, paspalum and panicum. In some areas pine and hardwood trees have encroached. During the idle rotation of rice growing a dense stand of tallow trees encroach in some areas.

DISTRIBUTION AND EXTENT: Southeast, Texas; Land Resource Region T; MLRA 150A; the series is of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Temple, Texas

SERIES ESTABLISHED: Jefferson County, Texas; 1996. The name comes from a small community.

REMARKS: The Viterbo series was previously included with the Verland series.

Diagnostic horizons and features recognized in this pedon are:

Particle size control section: 7 to 37 in. (Btg1, Btg2, Btssg1 horizon)

Ochric epipedon - 0 to 18 cm (0 to 7 in) (Ap horizon).

Argillic horizon - 18 to 203 cm (7 to 80 in) (Btg and Btssg horizons).

Vertic feature - Slickensides at a depth of 89 to 203 cm (35 to 80 in) (Btssg horizons).

Aquic feature - redoximorphic features throughout the pedon and aquic conditions in the upper part of the pedon in most years.

Additional Comments: Positive reaction to a,a,dipyridyl occurs in the Ap, Btg1, and Btg2 horizons

ADDITIONAL DATA: Particle-size analysis, salinity and sodicity tests were performed at the project office on 13 pedons (S92TX6236501, S11TX2911344, S11TX2911346, S11TX2911255, S11TX2911273 S11TX2914225, S11TX2913215, S11TX2913218, S11TX2913267, S11TX2913077, S10TX0713065, S11TX2916168, S11TX2916098).

Taxonomic Version: Keys to Soil Taxonomy, Eleventh Edition, 2010

National Cooperative Soil Survey
U.S.A.