United States Department of Agriculture

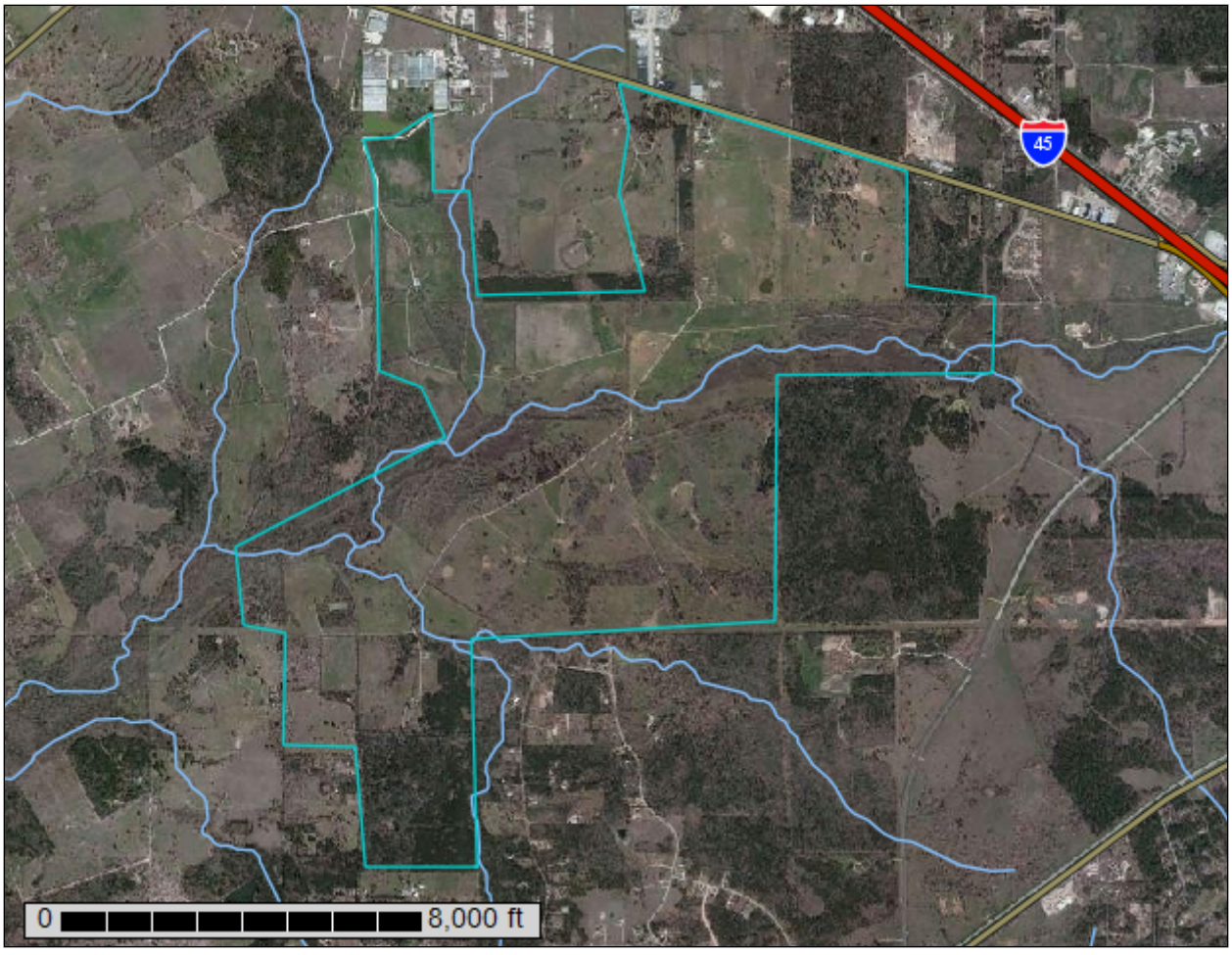
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Walker County, Texas

SHSU Gibbs Ranch



March 24, 2015

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

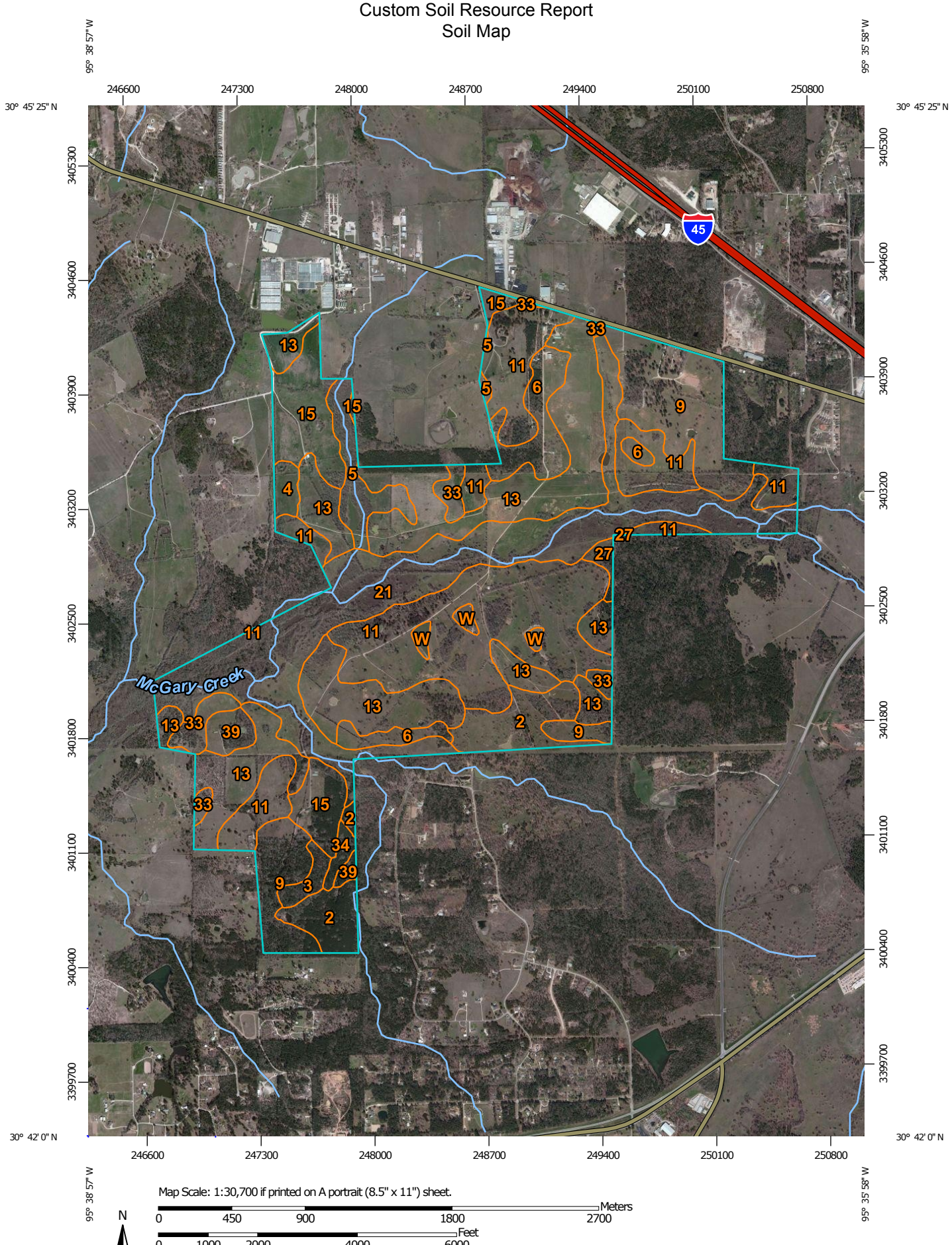
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

0 450 900 1800 2700 Meters

0 1000 2000 4000 6000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Walker County, Texas (TX471)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	90.9	5.2%
3	Annona association, gently rolling	13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	179.0	10.3%
11	Elmina association, gently undulating	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	351.3	20.1%
27	Kanebreak soils, frequently flooded	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes	21.3	1.2%
W	Water	11.2	0.6%
Totals for Area of Interest		**1,745.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic

class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Walker County, Texas

2—Annona association, gently undulating

Map Unit Setting

National map unit symbol: mbb0
Elevation: 200 to 500 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 230 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Annona and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Annona

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 44 inches: clay
H3 - 44 to 80 inches: clay

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Minor Components

Unnamed

Percent of map unit: 20 percent

3—Annona association, gently rolling

Map Unit Setting

National map unit symbol: mbbc
Elevation: 200 to 500 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 230 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Annona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Annona

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 44 inches: clay
H3 - 44 to 80 inches: clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Minor Components

Unnamed

Percent of map unit: 15 percent

4—Arol fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2shgn
Elevation: 140 to 420 feet
Mean annual precipitation: 36 to 49 inches
Mean annual air temperature: 67 to 68 degrees F
Frost-free period: 275 to 281 days
Farmland classification: Not prime farmland

Map Unit Composition

Arol and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arol

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey residuum weathered from tuffaceous sandstone and siltstone of the catahoula formation of miocene age

Typical profile

A - 0 to 6 inches: fine sandy loam
Bt - 6 to 30 inches: clay
Cr - 30 to 45 inches: cemented bedrock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 39 inches to paralithic bedrock
Natural drainage class: Moderately well 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 3 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0

Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

Minor Components

Shalba

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

5—Arol fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2shgh
Elevation: 140 to 500 feet
Mean annual precipitation: 36 to 49 inches
Mean annual air temperature: 67 to 69 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Arol and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arol

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey residuum weathered from tuffaceous sandstone and siltstone of the catahoula formation of miocene age

Typical profile

A - 0 to 6 inches: fine sandy loam
Bt - 6 to 30 inches: clay
Cr - 30 to 45 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 39 inches to paralithic bedrock
Natural drainage class: Moderately well 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 3 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

Minor Components

Falba

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

6—Arriola fine sandy loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: mbbx
Elevation: 200 to 400 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 66 to 68 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Arriola, affr >30, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arriola, Affr >30

Setting

Landform: Interfluves
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey marine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 38 inches: clay
H3 - 38 to 50 inches: bedrock

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Moderately well drained
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D

Minor Components

Unnamed

Percent of map unit: 20 percent

9—Depcor-Huntsburg association, gently undulating

Map Unit Setting

National map unit symbol: mbc0
Elevation: 150 to 450 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 66 to 70 degrees F
Frost-free period: 240 to 283 days
Farmland classification: Not prime farmland

Map Unit Composition

Depcor, affr >30, and similar soils: 54 percent
Huntsburg and similar soils: 31 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Depcor, Affr >30

Setting

Landform: Interfluves
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Marine deposits

Typical profile

H1 - 0 to 26 inches: loamy fine sand
H2 - 26 to 65 inches: sandy clay loam
H3 - 65 to 80 inches: sandy clay loam

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: Pinus taeda-pinus echinata/callicarpa americana/schizachyrium scoparium var. divergens (F133BY003TX)

Description of Huntsburg

Setting

Landform: Interfluves
Parent material: Clayey marine deposits

Typical profile

H1 - 0 to 14 inches: loamy fine sand
H2 - 14 to 22 inches: sandy clay
H3 - 22 to 72 inches: clay

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
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 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Minor Components

Unnamed

Percent of map unit: 15 percent

11—Elmina association, gently undulating

Map Unit Setting

National map unit symbol: mb9q
Elevation: 170 to 350 feet
Mean annual precipitation: 40 to 46 inches
Mean annual air temperature: 66 to 68 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Elmina and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elmina

Setting

Landform: Interfluves
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits and/or loamy marine deposits

Typical profile

H1 - 0 to 32 inches: loamy fine sand
H2 - 32 to 40 inches: loamy fine sand
H3 - 40 to 52 inches: clay
H4 - 52 to 59 inches: clay
H5 - 59 to 80 inches: bedrock

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Natural drainage class: Somewhat poorly drained
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 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Minor Components

Unnamed
Percent of map unit: 20 percent

13—Falba fine sandy loam, 1 to 5 percent slopes

Map Unit Setting
National map unit symbol: mb9s
Elevation: 200 to 550 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 66 to 70 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition
Falba and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Falba

Setting
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from tuffaceous sandstone and siltstone of the catahoula formation of miocene age

Typical profile
H1 - 0 to 7 inches: fine sandy loam
H2 - 7 to 24 inches: clay
H3 - 24 to 33 inches: clay
H4 - 33 to 55 inches: bedrock

Properties and qualities
Slope: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Moderately well drained
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 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Nonsaline to moderately saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

Minor Components

Unnamed
Percent of map unit: 20 percent

15—Falba and Arol soils, 1 to 5 percent slopes, eroded

Map Unit Setting
National map unit symbol: mb9v
Elevation: 200 to 600 feet
Mean annual precipitation: 35 to 45 inches
Mean annual air temperature: 66 to 70 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition
Falba, eroded, and similar soils: 50 percent
Arol, eroded, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Falba, Eroded

Setting
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from tuffaceous sandstone and siltstone of the catahoula formation of miocene age

Typical profile
H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 24 inches: clay
H3 - 24 to 34 inches: clay
H4 - 34 to 50 inches: bedrock

Properties and qualities
Slope: 1 to 5 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Moderately well drained
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 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to moderately saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

Description of Arol, Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey residuum weathered from mudstone

Typical profile

H1 - 0 to 6 inches: fine sandy loam
H2 - 6 to 30 inches: clay
H3 - 30 to 45 inches: bedrock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Moderately well drained
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 3 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

Minor Components

Unnamed

Percent of map unit: 10 percent

21—Gowker and Kanebreak soils, frequently flooded

Map Unit Setting

National map unit symbol: mbb2
Elevation: 50 to 300 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 66 to 70 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Gowker and similar soils: 45 percent
Kanebreak and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gowker

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 30 inches: clay loam
H2 - 30 to 44 inches: clay loam
H3 - 44 to 60 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 30 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Gypsum, maximum in profile: 2 percent
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: C/D

Description of Kanebreak

Setting

Landform: Flood plains
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 28 inches: sandy clay loam
H3 - 28 to 70 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: Quercus phellos/justicia ovata (F133BY009TX)

Minor Components

Unnamed

Percent of map unit: 15 percent

27—Kanebreak soils, frequently flooded

Map Unit Setting

National map unit symbol: mbb8
Elevation: 150 to 200 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 66 to 70 degrees F
Frost-free period: 260 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Kanebreak, affr >30, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kanebreak, Affr >30

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 28 inches: sandy clay loam
H3 - 28 to 70 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: Quercus phellos/justicia ovata (F133BY009TX)

Minor Components

Unnamed

Percent of map unit: 10 percent

33—Leson clay, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: mbbh
Elevation: 350 to 750 feet
Mean annual precipitation: 34 to 44 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Leson and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leson

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale in the fleming formation of miocene age

Typical profile

H1 - 0 to 5 inches: clay
H2 - 5 to 30 inches: clay
H3 - 30 to 60 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: Blackland 32-40" pz (R086BY208TX)

Minor Components

Unnamed

Percent of map unit: 17 percent

34—Lufkin fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: mbbj
Elevation: 230 to 500 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 275 days

Farmland classification: Not prime farmland

Map Unit Composition

Lufkin and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lufkin

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey alluvium of pleistocene age derived from mixed sources

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 55 inches: clay
H3 - 55 to 75 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: Claypan savannah 28-40" pz (R087AY221TX)

Minor Components

Unnamed, hydric

Percent of map unit: 5 percent
Landform: Depressions

39—Redco clay, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: mbbp
Elevation: 150 to 400 feet

Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 66 to 70 degrees F
Frost-free period: 240 to 265 days
Farmland classification: Not prime farmland

Map Unit Composition
Redco and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Redco

Setting
Landform: Interfluves
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from shale

Typical profile
H1 - 0 to 7 inches: clay
H2 - 7 to 40 inches: clay
H3 - 40 to 72 inches: clay

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D

Minor Components

Unnamed
Percent of map unit: 20 percent

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

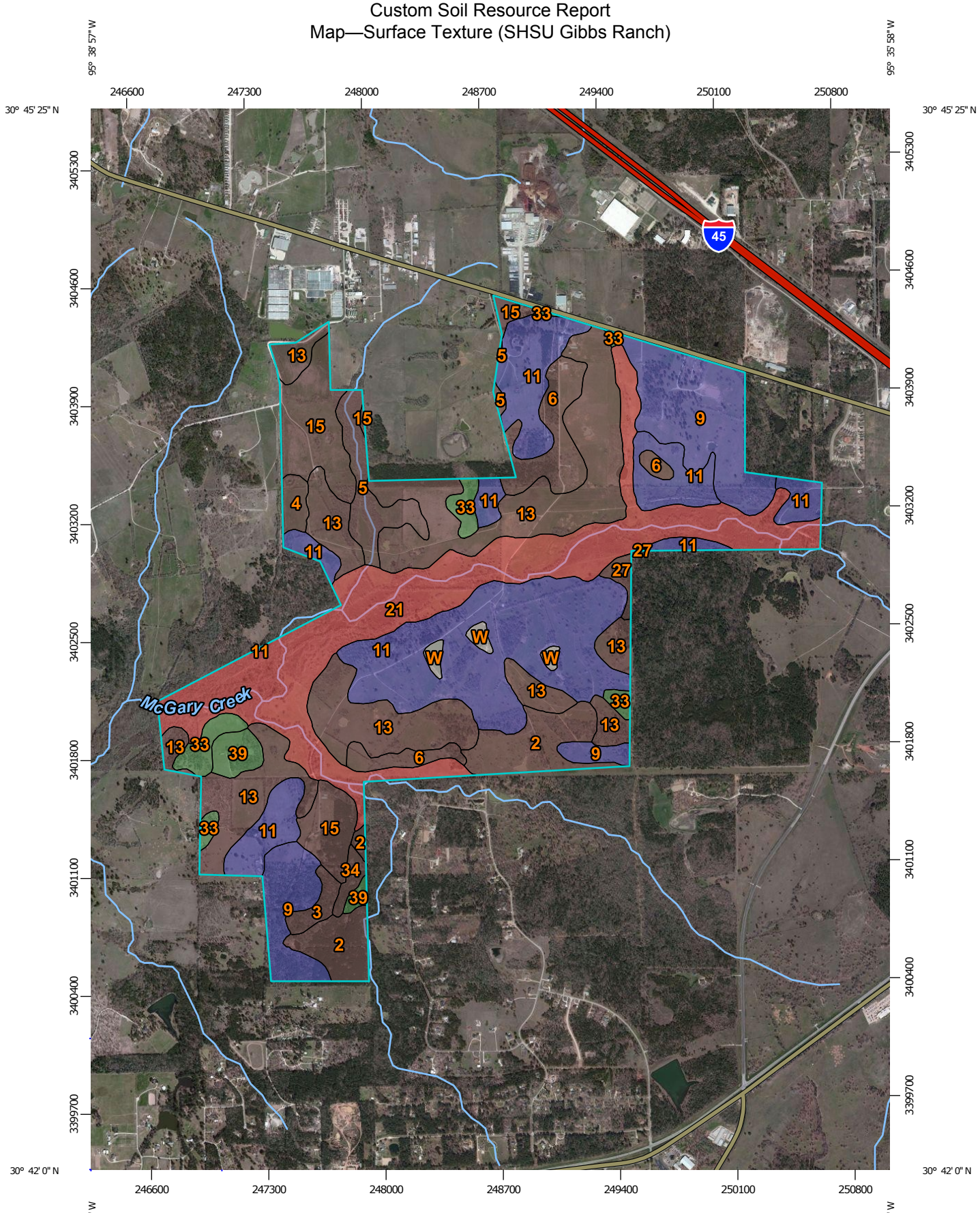
Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Surface Texture (SHSU Gibbs Ranch)

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Map—Surface Texture (SHSU Gibbs Ranch)



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

0 450 900 1800 2700 Meters

0 1000 2000 4000 6000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Clay
- Clay loam
- Fine sandy loam
- Loamy fine sand
- Not rated or not available

Soil Rating Lines
- Clay
- Clay loam
- Fine sandy loam
- Loamy fine sand
- Not rated or not available

Soil Rating Points
- Clay
- Clay loam
- Fine sandy loam
- Loamy fine sand
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Surface Texture (SHSU Gibbs Ranch)

Surface Texture— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	Fine sandy loam	90.9	5.2%
3	Annona association, gently rolling	Fine sandy loam	13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	Fine sandy loam	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	Fine sandy loam	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	Fine sandy loam	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	Loamy fine sand	179.0	10.3%
11	Elmina association, gently undulating	Loamy fine sand	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	Fine sandy loam	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	Fine sandy loam	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	Clay loam	351.3	20.1%
27	Kanebreak soils, frequently flooded	Fine sandy loam	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes	Clay	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	Fine sandy loam	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes	Clay	21.3	1.2%
W	Water		11.2	0.6%
Totals for Area of Interest			**1,745.1**	**100.0%**

Rating Options—Surface Texture (SHSU Gibbs Ranch)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Soil Qualities and Features

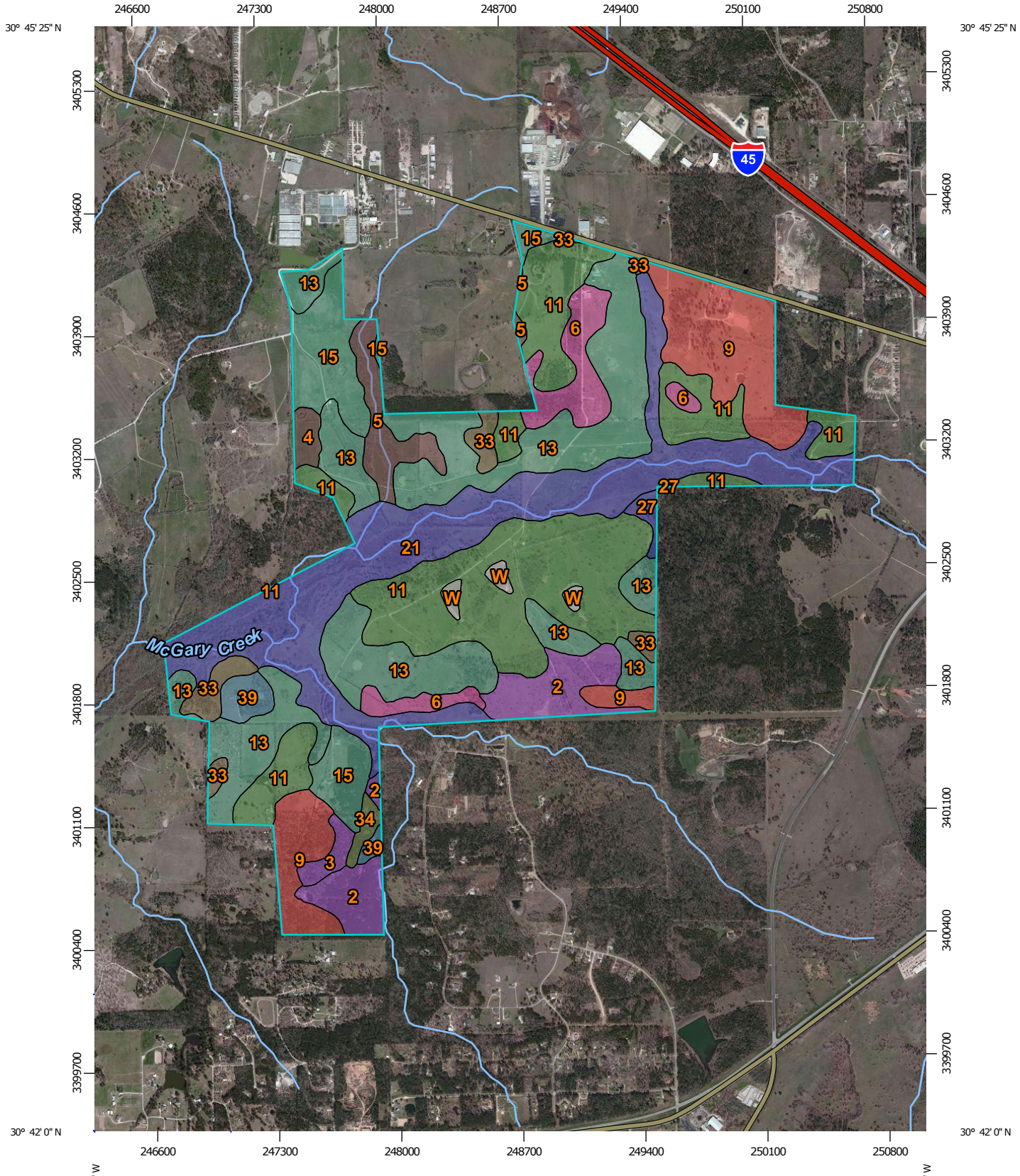
Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Parent Material Name (Gibbs Ranch Parent Material Map)

Parent material name is a term for the general physical, chemical, and mineralogical composition of the unconsolidated material, mineral or organic, in which the soil forms. Mode of deposition and/or weathering may be implied by the name.

The soil surveyor uses parent material to develop a model used for soil mapping. Soil scientists and specialists in other disciplines use parent material to help interpret soil boundaries and project performance of the material below the soil. Many soil properties relate to parent material. Among these properties are proportions of sand, silt, and clay; chemical content; bulk density; structure; and the kinds and amounts of rock fragments. These properties affect interpretations and may be criteria used to separate soil series. Soil properties and landscape information may imply the kind of parent material.

For each soil in the database, one or more parent materials may be identified. One is marked as the representative or most commonly occurring. The representative parent material name is presented here.



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 450 900 1800 2700

Feet
0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- clayey alluvium
- clayey alluvium of Pleistocene age derived from mixed sources
- clayey marine deposits
- clayey residuum weathered from shale
- clayey residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age
- loamy alluvium
- marine deposits
- residuum weathered from calcareous shale in the Fleming formation of Miocene age
- residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age
- sandy marine deposits and/or loamy marine deposits
- Not rated or not available

Soil Rating Lines

- clayey alluvium
- clayey alluvium of Pleistocene age derived from mixed sources
- clayey marine deposits
- clayey residuum weathered from shale
- clayey residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age
- loamy alluvium
- marine deposits
- residuum weathered from calcareous shale in the Fleming formation of Miocene age
- residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age
- sandy marine deposits and/or loamy marine deposits
- Not rated or not available

Soil Rating Points

- clayey alluvium
- clayey alluvium of Pleistocene age derived from mixed sources
- clayey marine deposits
- clayey residuum weathered from shale
- clayey residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age
- loamy alluvium
- marine deposits
- residuum weathered from calcareous shale in the Fleming formation of Miocene age
- residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age
- sandy marine deposits and/or loamy marine deposits
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Parent Material Name (Gibbs Ranch Parent Material Map)

Parent Material Name— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	clayey alluvium	90.9	5.2%
3	Annona association, gently rolling	clayey alluvium	13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	clayey residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	clayey residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	clayey marine deposits	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	marine deposits	179.0	10.3%
11	Elmina association, gently undulating	sandy marine deposits and/or loamy marine deposits	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	residuum weathered from tuffaceous sandstone and siltstone of the Catahoula Formation of Miocene age	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	loamy alluvium	351.3	20.1%
27	Kanebreak soils, frequently flooded	loamy alluvium	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes	residuum weathered from calcareous shale in the Fleming formation of Miocene age	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	clayey alluvium of Pleistocene age derived from mixed sources	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes	clayey residuum weathered from shale	21.3	1.2%

Parent Material Name— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
W	Water		11.2	0.6%
Totals for Area of Interest			**1,745.1**	**100.0%**

Rating Options—Parent Material Name (Gibbs Ranch Parent Material Map)

Aggregation Method: Dominant Condition

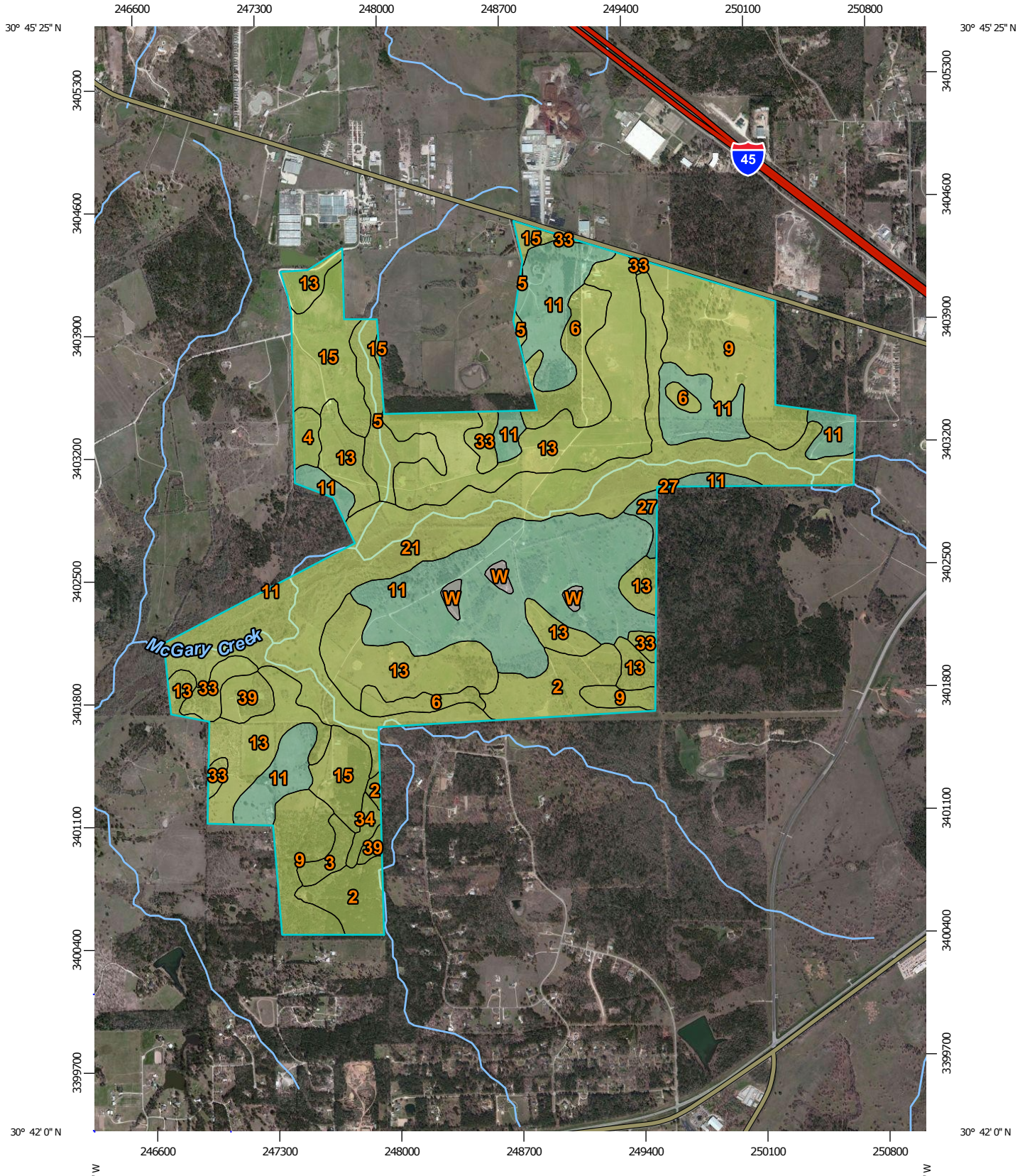
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Drainage Class (SHSU Gibbs Ranch)

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Custom Soil Resource Report
Map—Drainage Class (SHSU Gibbs Ranch)



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 450 900 1800 2700

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Drainage Class (SHSU Gibbs Ranch)

Drainage Class— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	Moderately well drained	90.9	5.2%
3	Annona association, gently rolling	Moderately well drained	13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	Moderately well drained	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	Moderately well drained	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	Moderately well drained	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	Moderately well drained	179.0	10.3%
11	Elmina association, gently undulating	Somewhat poorly drained	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	Moderately well drained	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	Moderately well drained	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	Moderately well drained	351.3	20.1%
27	Kanebreak soils, frequently flooded	Somewhat poorly drained	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes	Moderately well drained	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	Moderately well drained	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes	Moderately well drained	21.3	1.2%
W	Water		11.2	0.6%
Totals for Area of Interest			**1,745.1**	**100.0%**

Rating Options—Drainage Class (SHSU Gibbs Ranch)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Water Features

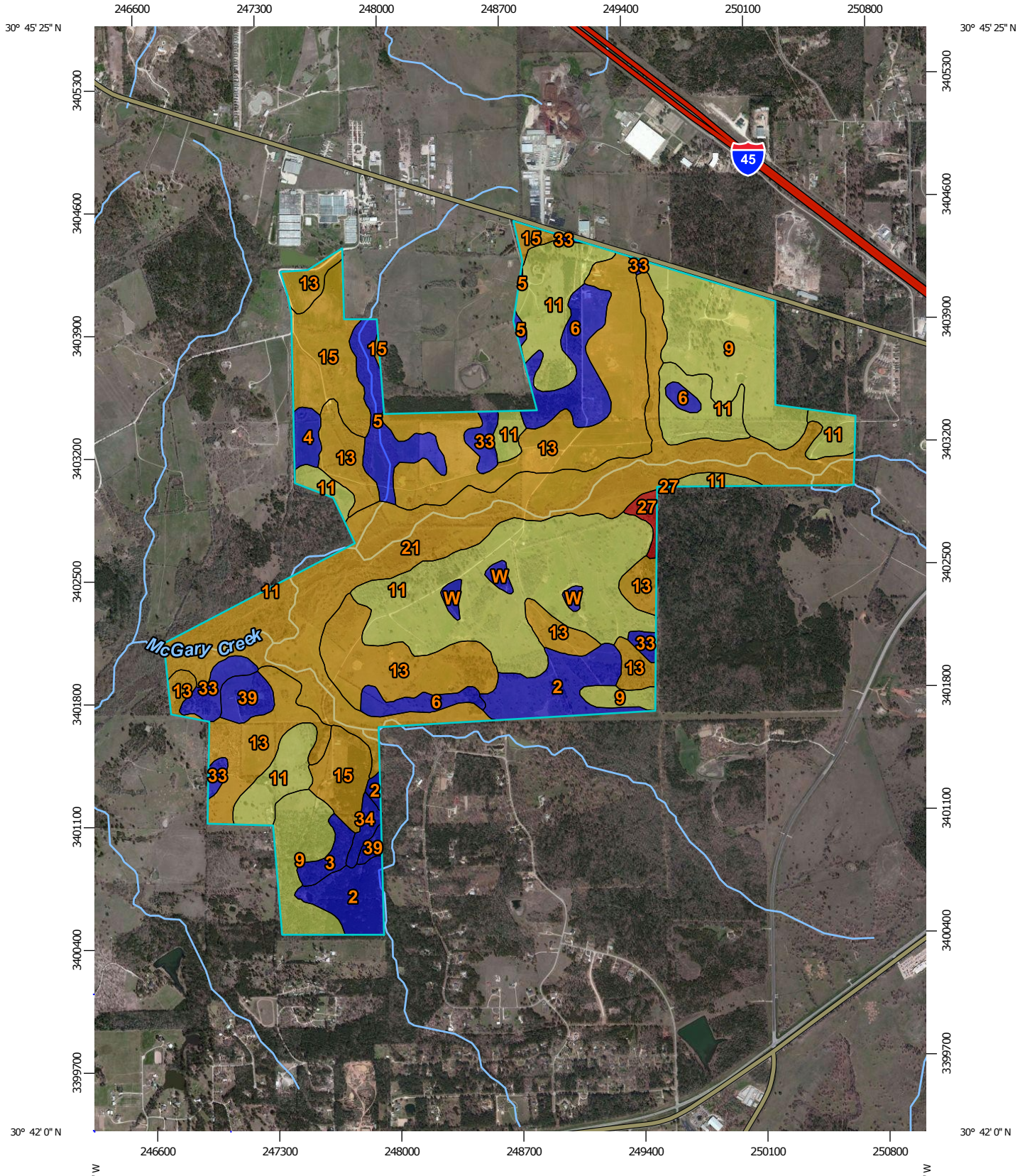
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table (SHSU Gibbs Ranch)

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Water Table (SHSU Gibbs Ranch)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Water Table (SHSU Gibbs Ranch)

Depth to Water Table— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating (centimeters)**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	>200	90.9	5.2%
3	Annona association, gently rolling	>200	13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	>200	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	>200	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	>200	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	84	179.0	10.3%
11	Elmina association, gently undulating	77	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	31	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	31	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	46	351.3	20.1%
27	Kanebreak soils, frequently flooded	23	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes	>200	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	>200	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes	>200	21.3	1.2%
W	Water	>200	11.2	0.6%
Totals for Area of Interest			**1,745.1**	**100.0%**

Rating Options—Depth to Water Table (SHSU Gibbs Ranch)

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Flooding Frequency Class (SHSU Gibbs Ranch)

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

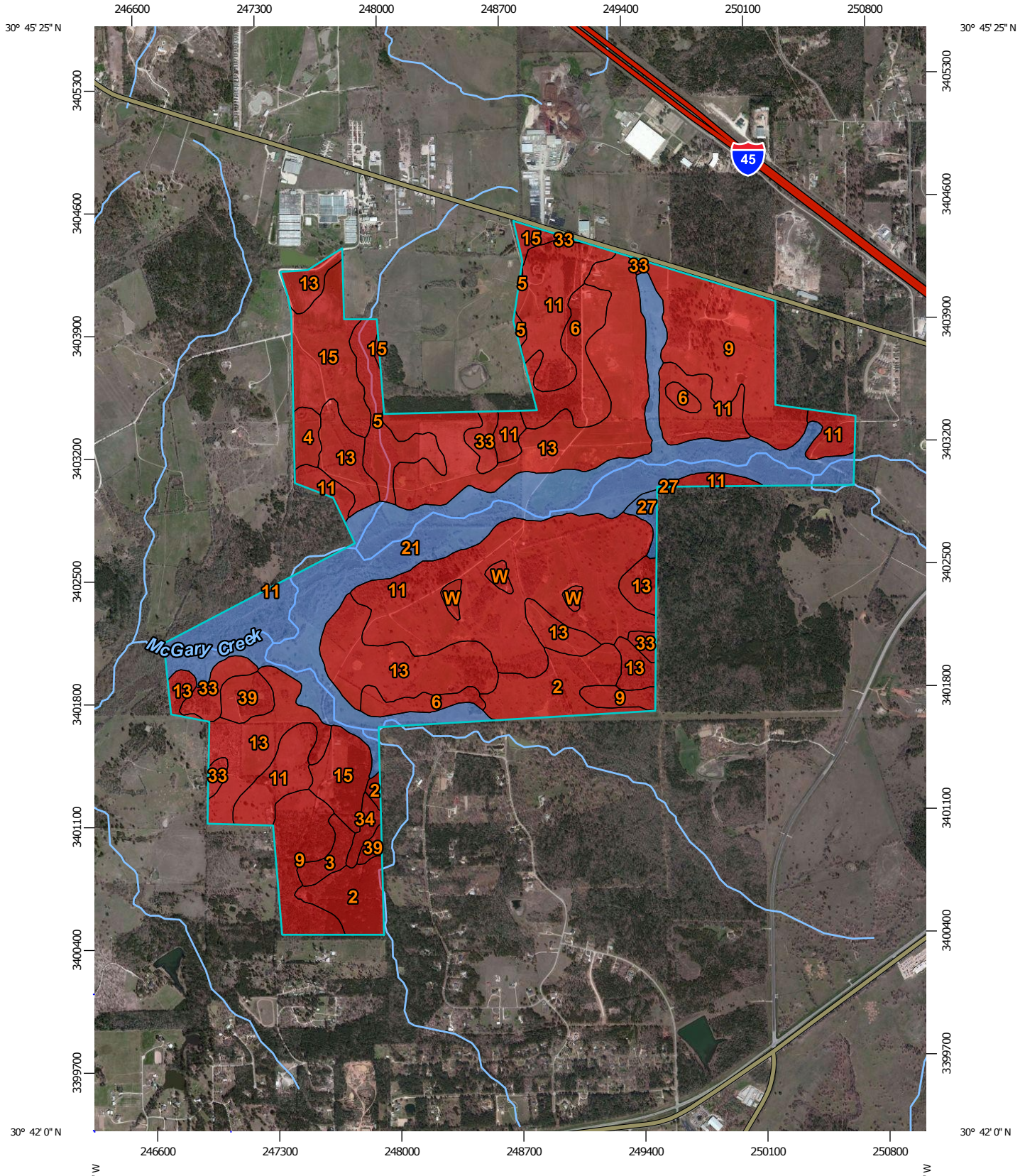
"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Map—Flooding Frequency Class (SHSU Gibbs Ranch)



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 450 900 1800 2700

Feet
0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Lines
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Points
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 10, Sep 29, 2014

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Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

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Table—Flooding Frequency Class (SHSU Gibbs Ranch)

Flooding Frequency Class— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	None	90.9	5.2%
3	Annona association, gently rolling	None	13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	None	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	None	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	None	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	None	179.0	10.3%
11	Elmina association, gently undulating	None	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	None	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	None	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	Frequent	351.3	20.1%
27	Kanebreak soils, frequently flooded	Frequent	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes	None	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	None	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes	None	21.3	1.2%
W	Water	None	11.2	0.6%
Totals for Area of Interest			**1,745.1**	**100.0%**

Rating Options—Flooding Frequency Class (SHSU Gibbs Ranch)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

Soil Information for Hayland/ Pastureland

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

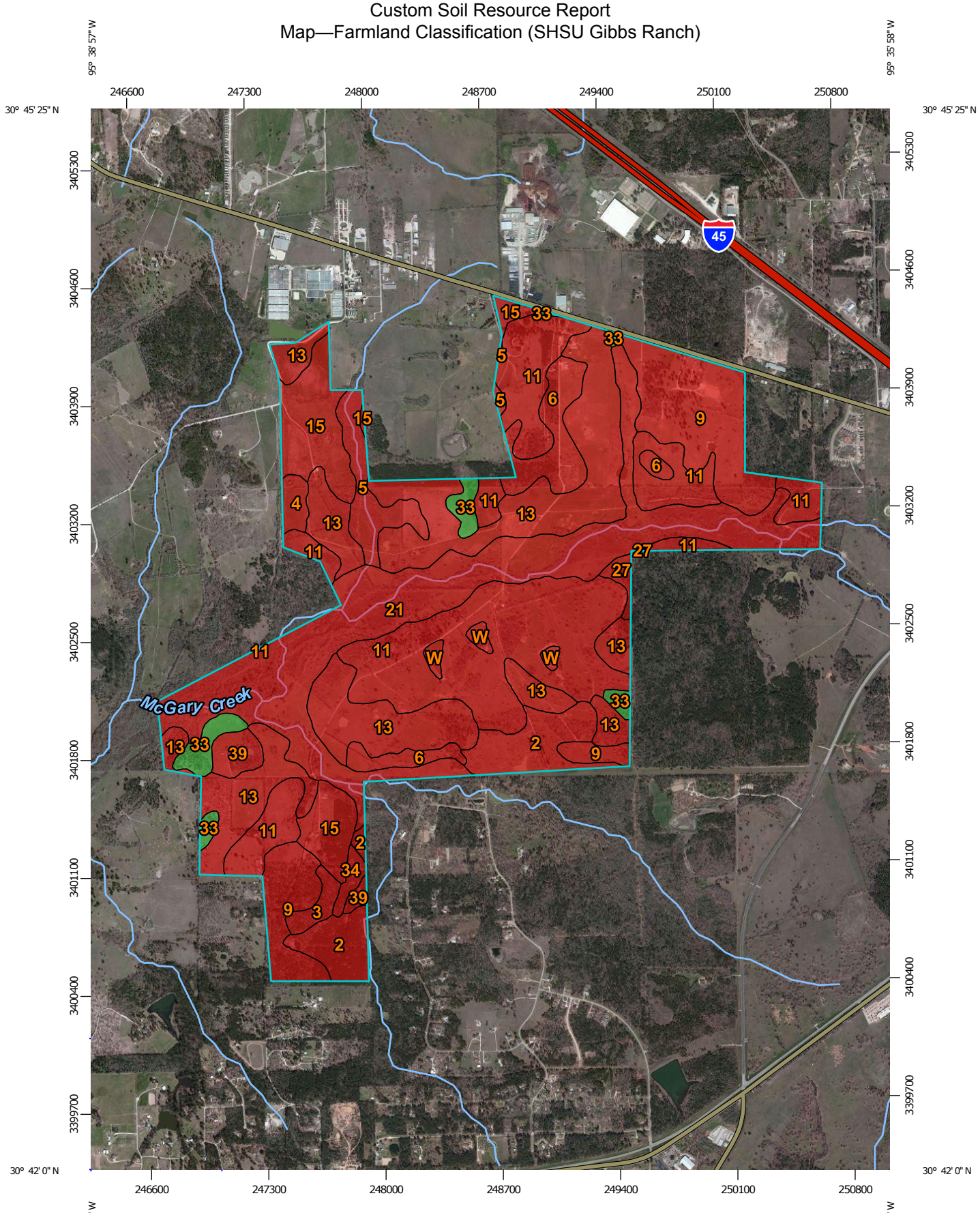
Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification (SHSU Gibbs Ranch)

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Map—Farmland Classification (SHSU Gibbs Ranch)



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 450 900 1800 2700

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

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Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

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Table—Farmland Classification (SHSU Gibbs Ranch)

Farmland Classification— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	Not prime farmland	90.9	5.2%
3	Annona association, gently rolling	Not prime farmland	13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	Not prime farmland	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	Not prime farmland	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	Not prime farmland	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	Not prime farmland	179.0	10.3%
11	Elmina association, gently undulating	Not prime farmland	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	Not prime farmland	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	Not prime farmland	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	Not prime farmland	351.3	20.1%
27	Kanebreak soils, frequently flooded	Not prime farmland	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes	All areas are prime farmland	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	Not prime farmland	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes	Not prime farmland	21.3	1.2%
W	Water	Not prime farmland	11.2	0.6%
Totals for Area of Interest			**1,745.1**	**100.0%**

Rating Options—Farmland Classification (SHSU Gibbs Ranch)

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Vegetative Productivity

Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Yields of Non-Irrigated Crops (Map Unit): Common bermudagrass (AUM) (SHSU Gibbs Ranch)

These are the estimated average yields per acre that can be expected of selected nonirrigated crops under a high level of management. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors.

In the database, some states maintain crop yield data by individual map unit component and others maintain the data at the map unit level. Attributes are included in this application for both, although only one or the other is likely to contain data for any given geographic area. This attribute uses data maintained at the map unit level.

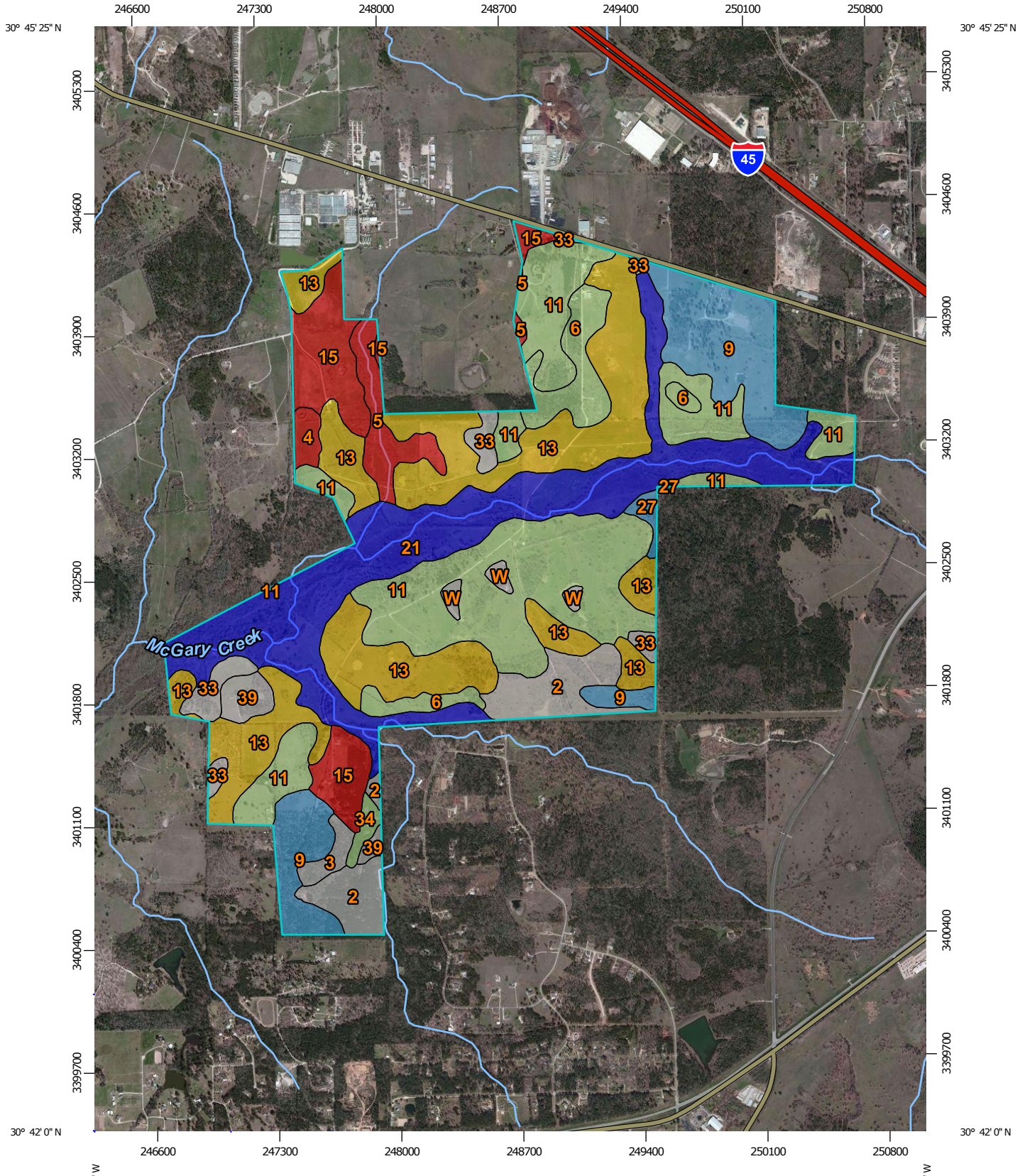
The yields are actually recorded as three separate values in the database. A low value and a high value indicate the range for the soil component. A "representative" value indicates the expected value for the component. For these yields, only the representative value is used.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby areas and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for the selected crop. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Map—Yields of Non-Irrigated Crops (Map Unit): Common bermudagrass (AUM) (SHSU Gibbs ...



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 450 900 1800 2700

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 2.00
- > 2.00 and <= 3.00
- > 3.00 and <= 4.00
- > 4.00 and <= 5.00
- > 5.00 and <= 6.00
- Not rated or not available

Soil Rating Lines
- <= 2.00
- > 2.00 and <= 3.00
- > 3.00 and <= 4.00
- > 4.00 and <= 5.00
- > 5.00 and <= 6.00
- Not rated or not available

Soil Rating Points
- <= 2.00
- > 2.00 and <= 3.00
- > 3.00 and <= 4.00
- > 4.00 and <= 5.00
- > 5.00 and <= 6.00
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
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Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

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Table—Yields of Non-Irrigated Crops (Map Unit): Common bermudagrass (AUM) (SHSU Gibbs Ranch)

Yields of Non-Irrigated Crops (Map Unit): Common bermudagrass (AUM)— Summary by Map Unit — Walker County, Texas (TX471)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating		90.9	5.2%
3	Annona association, gently rolling		13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	2.00	11.9	0.7%
5	Arol fine sandy loam, 1 to 3 percent slopes	2.00	45.3	2.6%
6	Arriola fine sandy loam, 1 to 5 percent slopes	4.00	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	4.50	179.0	10.3%
11	Elmina association, gently undulating	4.00	402.4	23.1%
13	Falba fine sandy loam, 1 to 5 percent slopes	3.00	389.3	22.3%
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	2.00	104.8	6.0%
21	Gowker and Kanebreak soils, frequently flooded	6.00	351.3	20.1%
27	Kanebreak soils, frequently flooded	5.00	7.4	0.4%
33	Leson clay, 0 to 3 percent slopes		38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	4.00	8.5	0.5%
39	Redco clay, 0 to 2 percent slopes		21.3	1.2%
W	Water		11.2	0.6%
Totals for Area of Interest			**1,745.1**	**100.0%**

Rating Options—Yields of Non-Irrigated Crops (Map Unit): Common bermudagrass (AUM) (SHSU Gibbs Ranch)

Crop: Common bermudagrass

Yield Units: AUM

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Higher

Wildlife Management

Wildlife Management interpretations are tools for evaluating the suitability of the soil for various components of wildlife habitat, and as habitat of different types or species of wildlife. Example interpretations include crawfish aquaculture, burrowing animals and reptiles, grasses and legumes for food and cover, and freshwater wetland plants.

Upland Mixed Deciduous and Conifer Trees (TX) (SHSU Gibbs Ranch)

Upland mixed deciduous and conifer trees (TX) interpretation provides a tool to assess a soil's limitations for use as either primary or secondary wildlife habitat. This interpretation is useful for planning the establishment and maintenance of mixed deciduous and coniferous trees for use as wildlife habitat. The ratings are for the soils in their natural condition and do not consider present land use, existing vegetation, water sources, and the presence or absence of wildlife in the area.

The interpretation ranks the soil as a medium for growing mixed deciduous and coniferous trees that meet specific local habitat requirements for targeted and non-targeted species of wildlife. Commonly, deciduous and coniferous trees are established through natural processes, are seeded, or are transplanted. In general, better soil conditions are required for mixed stands to maintain the deciduous tree component; however, many of the coniferous species adapt to harsher soil conditions.

The interpretation provides interpretive ratings and identifies the dominant soil characteristics that limit the site for growing a mixture of deciduous and coniferous trees, either naturally or artificially established. This information allows the user to plan and develop alternative sites, and to identify the deciduous and coniferous tree species that best meet wildlife habitat requirements. The soil properties and qualities important in establishment and growth of mixed deciduous and coniferous trees are soil depth, available water holding capacity, wetness, sodium and salt content, surface texture, coarse fragments, pH, temperature extremes and dry climates

Numerical ratings or values indicate the relative severity or degree of limitation for individual soil restrictive (limiting) features. Ratings are shown for limiting soil features as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00), and the point at which the soil feature is not a limitation (0.00). Non-limiting soil features with a numerical rating of zero are not listed.

Rating class terms indicate the extent to which the soils are limited by the soil features that affect the soil interpretation. Verbal soil rating classes are based on the highest numerical rating for the most limiting soil feature(s) considered in the rating process. The "not limited" class (numerical value for the most restrictive feature = 0) indicates that the soil has no limiting features for the specified use. The "somewhat limited" class (numerical value for the most restrictive feature .01 to .99) indicates that the soil has limiting features for the specified use that can be overcome with proper planning, design, installation, and management. The effort required to overcome a soil limitation

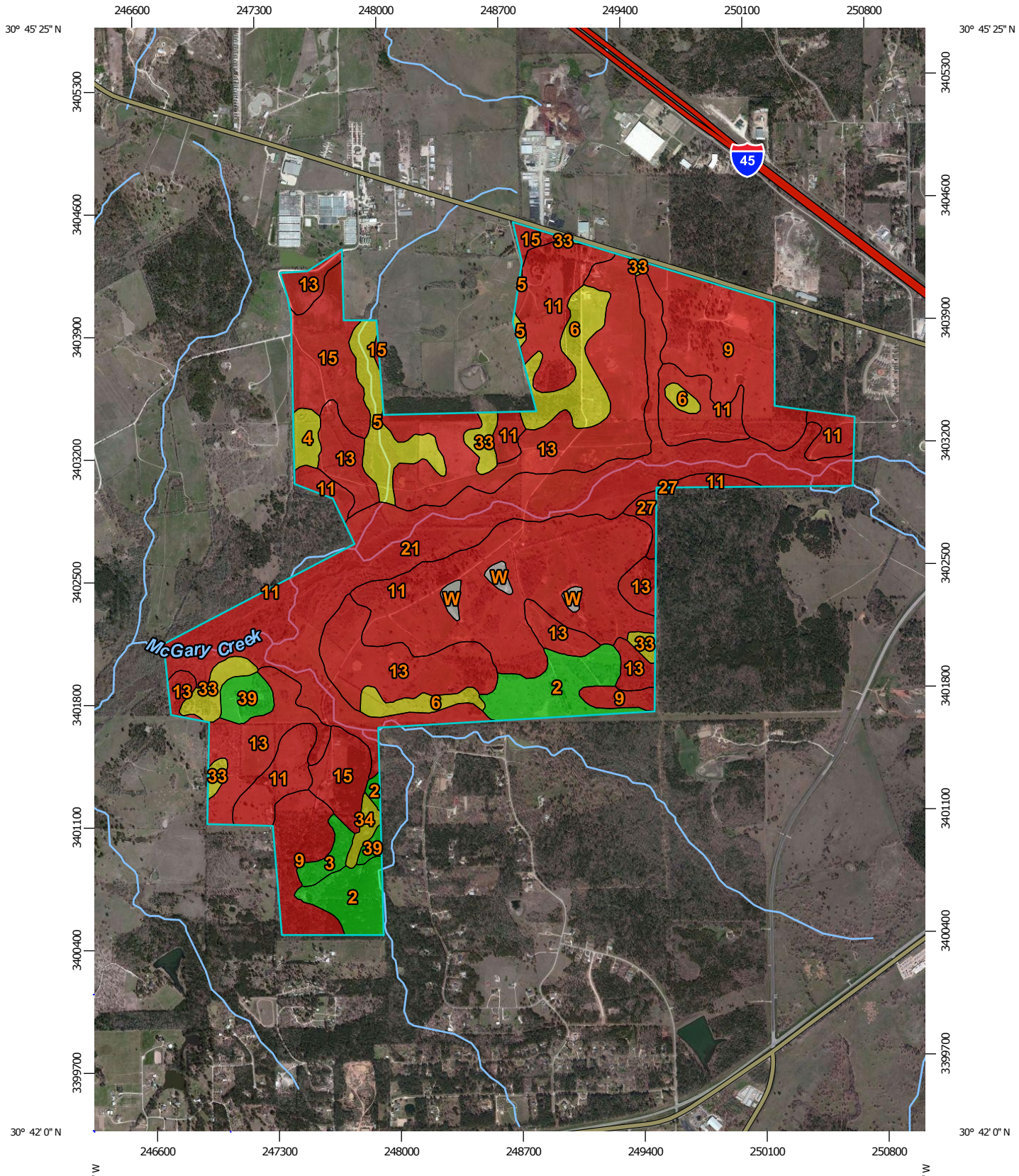
increases as the numerical rating increases. The "very limited" class (numerical value for the most restrictive feature = 1.00) indicates that the soil has one or more very limiting features that can only be overcome with special planning, major soil modification, special design, or significant management practices.

Lesser soil restrictive features have a lower numerical value than the maximum used to rate the soil, and they are identified to provide the user with additional information about soil limitations for the specific use. Lesser soil restrictive features also need to be considered in planning, design, installation, and management.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen, which is displayed on the report. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the Selected Soil Interpretations report with this interpretation included from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Map—Upland Mixed Deciduous and Conifer Trees (TX) (SHSU Gibbs Ranch)



Map Scale: 1:30,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 450 900 1800 2700

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—Upland Mixed Deciduous and Conifer Trees (TX) (SHSU Gibbs Ranch)

Upland Mixed Deciduous and Conifer Trees (TX)— Summary by Map Unit — Walker County, Texas (TX471)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	Not limited	Annona (80%)		90.9	5.2%
3	Annona association, gently rolling	Not limited	Annona (85%)		13.0	0.7%
4	Arol fine sandy loam, 0 to 1 percent slopes	Somewhat limited	Arol (90%)	Droughty (0.68)	11.9	0.7%
				Too arid (0.50)		
				Bedrock (0.46)		
5	Arol fine sandy loam, 1 to 3 percent slopes	Somewhat limited	Arol (90%)	Droughty (0.77)	45.3	2.6%
				Too arid (0.50)		
				Bedrock (0.46)		
6	Arriola fine sandy loam, 1 to 5 percent slopes	Somewhat limited	Arriola, AFFR >30 (80%)	Bedrock (0.01)	70.8	4.1%
9	Depcor-Huntsburg association, gently undulating	Very limited	Depcor, AFFR >30 (54%)	Depth to saturated zone (1.00)	179.0	10.3%
				Growing season wetness (1.00)		
			Huntsburg (31%)	Depth to saturated zone (1.00)		
				Growing season wetness (1.00)		
11	Elmina association, gently undulating	Very limited	Elmina (80%)	Depth to saturated zone (1.00)	402.4	23.1%
				Growing season wetness (1.00)		
				Droughty (0.32)		
13	Falba fine sandy loam, 1 to 5 percent slopes	Very limited	Falba (80%)	Depth to saturated zone (1.00)	389.3	22.3%
				Growing season wetness (1.00)		
				Droughty (0.73)		
				Too arid (0.50)		
				Bedrock (0.21)		
15	Falba and Arol soils, 1 to 5	Very limited	Falba, eroded (50%)	Depth to saturated zone (1.00)	104.8	6.0%

Upland Mixed Deciduous and Conifer Trees (TX)— Summary by Map Unit — Walker County, Texas (TX471)						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
	percent slopes, eroded			Growing season wetness (1.00)		
				Droughty (0.70)		
				Too arid (0.50)		
				Bedrock (0.16)		
21	Gowker and Kanebreak soils, frequently flooded	Very limited	Gowker (45%)	Depth to saturated zone (1.00)	351.3	20.1%
				Growing season wetness (1.00)		
			Kanebreak (40%)	Depth to saturated zone (1.00)		
				Growing season wetness (1.00)		
27	Kanebreak soils, frequently flooded	Very limited	Kanebreak, AFFR >30 (90%)	Depth to saturated zone (1.00)	7.4	0.4%
				Growing season wetness (1.00)		
33	Leson clay, 0 to 3 percent slopes	Somewhat limited	Leson (83%)	Too arid (0.50)	38.1	2.2%
34	Lufkin fine sandy loam, 0 to 1 percent slopes	Somewhat limited	Lufkin (95%)	Too arid (0.50)	8.5	0.5%
				Droughty (0.19)		
39	Redco clay, 0 to 2 percent slopes	Not limited	Redco (80%)		21.3	1.2%
W	Water	Not rated	Water (100%)		11.2	0.6%
Totals for Area of Interest					**1,745.1**	**100.0%**

Upland Mixed Deciduous and Conifer Trees (TX)— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Very limited	1,434.2	82.2%
Somewhat limited	174.5	10.0%
Not limited	125.1	7.2%
Null or Not Rated	11.2	0.6%
Totals for Area of Interest	**1,745.1**	**100.0%**

Rating Options—Upland Mixed Deciduous and Conifer Trees (TX) (SHSU Gibbs Ranch)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Ecological Site Assessment

Individual soil map unit components can be correlated to a particular ecological site. The Ecological Site Assessment section includes ecological site descriptions, plant growth curves, state and transition models, and selected National Plants database information.

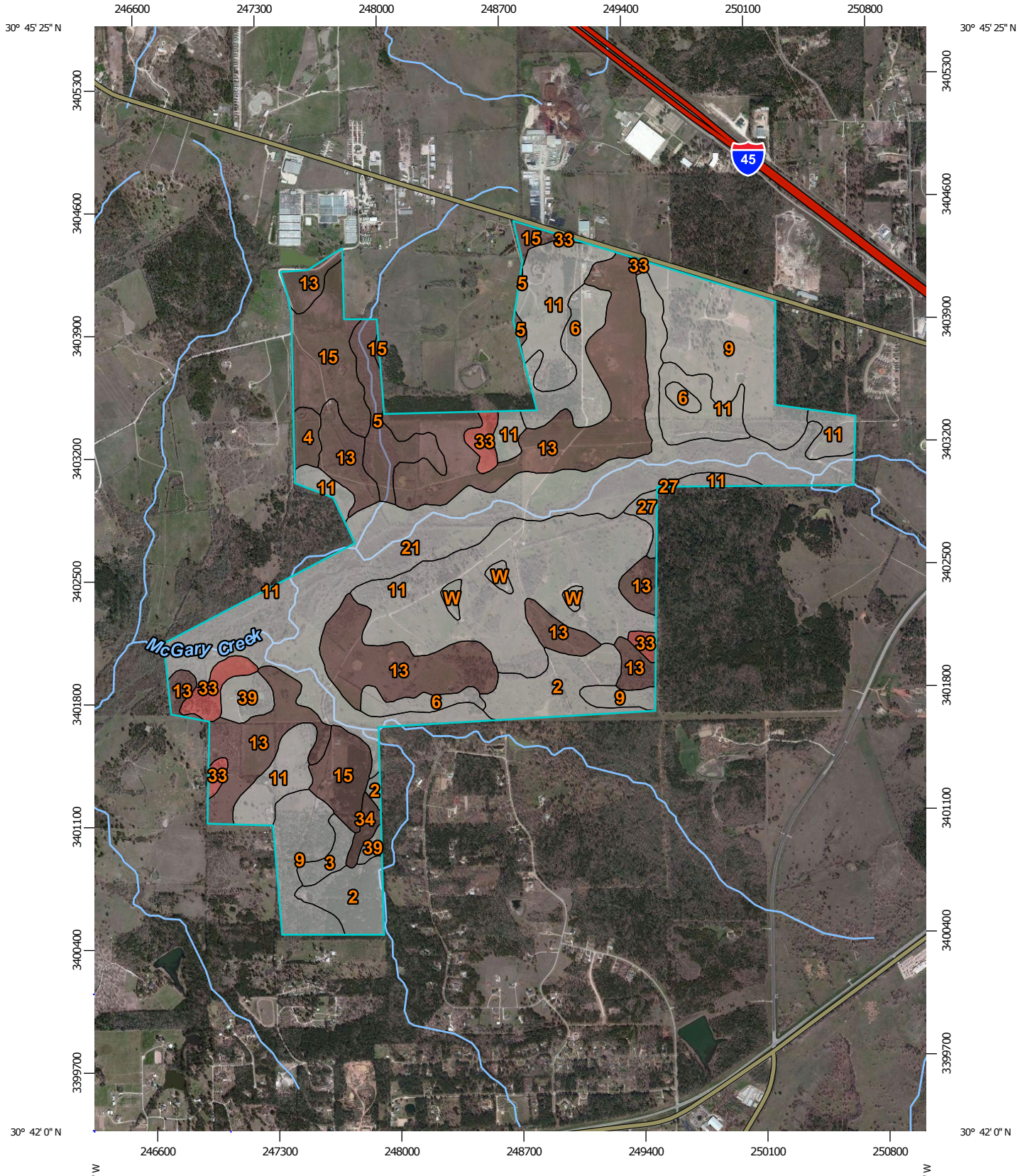
All Ecological Sites — Rangeland (SHSU Gibbs Ranch)

An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site ID" is the symbol assigned to a particular ecological site.

The map identifies the dominant ecological site for each map unit, aggregated by dominant condition. Other ecological sites may occur within each map unit. Each map unit typically consists of one or more components (soils and/or miscellaneous areas). Each soil component is associated with an ecological site. Miscellaneous areas, such as rock outcrop, sand dunes, and badlands, have little or no soil material and support little or no vegetation and therefore are not linked to an ecological site. The table below the map lists all of the ecological sites for each map unit component in your area of interest.

Custom Soil Resource Report
Map—Dominant Ecological Site (SHSU Gibbs Ranch)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- R086BY208TX
- R087AY221TX
- Not rated or not available

Soil Rating Lines

- R086BY208TX
- R087AY221TX
- Not rated or not available

Soil Rating Points

- R086BY208TX
- R087AY221TX
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Walker County, Texas
Survey Area Data: Version 10, Sep 29, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 26, 2011—Mar 6, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Ecological Sites by Map Unit Component (SHSU Gibbs Ranch)

Walker County, Texas					
Map unit symbol	**Map unit name**	**Component name (percent)**	**Ecological site**	**Acres in AOI**	**Percent of AOI**
2	Annona association, gently undulating	Annona (80%)		90.9	5.2%
		Unnamed (20%)			
3	Annona association, gently rolling	Annona (85%)		13.0	0.7%
		Unnamed (15%)			
4	Arol fine sandy loam, 0 to 1 percent slopes	Arol (90%)	R087AY221TX — Claypan Savannah 28-40" PZ	11.9	0.7%
		Shalba (10%)	R087AY221TX — Claypan Savannah 28-40" PZ		
5	Arol fine sandy loam, 1 to 3 percent slopes	Arol (90%)	R087AY221TX — Claypan Savannah 28-40" PZ	45.3	2.6%
		Falba (10%)	R087AY221TX — Claypan Savannah 28-40" PZ		
6	Arriola fine sandy loam, 1 to 5 percent slopes	Arriola, AFFR >30 (80%)		70.8	4.1%
		Unnamed (20%)			
9	Depcor-Huntsburg association, gently undulating	Depcor, AFFR >30 (54%)		179.0	10.3%
		Huntsburg (31%)			
		Unnamed (15%)			
11	Elmina association, gently undulating	Elmina (80%)		402.4	23.1%
		Unnamed (20%)			
13	Falba fine sandy loam, 1 to 5 percent slopes	Falba (80%)	R087AY221TX — Claypan Savannah 28-40" PZ	389.3	22.3%
		Unnamed (20%)			
15	Falba and Arol soils, 1 to 5 percent slopes, eroded	Falba, eroded (50%)	R087AY221TX — Claypan Savannah 28-40" PZ	104.8	6.0%
		Arol, eroded (40%)	R087AY221TX — Claypan Savannah 28-40" PZ		
		Unnamed (10%)			

Walker County, Texas					
Map unit symbol	**Map unit name**	**Component name (percent)**	**Ecological site**	**Acres in AOI**	**Percent of AOI**
21	Gowker and Kanebreak soils, frequently flooded	Gowker (45%)		351.3	20.1%
		Kanebreak (40%)			
		Unnamed (15%)			
27	Kanebreak soils, frequently flooded	Kanebreak, AFFR >30 (90%)		7.4	0.4%
		Unnamed (10%)			
33	Leson clay, 0 to 3 percent slopes	Leson (83%)	R086BY208TX — Blackland 32-40" PZ	38.1	2.2%
		Unnamed (17%)			
34	Lufkin fine sandy loam, 0 to 1 percent slopes	Lufkin (95%)	R087AY221TX — Claypan Savannah 28-40" PZ	8.5	0.5%
		Unnamed, hydric (5%)			
39	Redco clay, 0 to 2 percent slopes	Redco (80%)		21.3	1.2%
		Unnamed (20%)			
W	Water	Water (100%)		11.2	0.6%
Totals for Area of Interest				**1,745.1**	**100.0%**

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