

APPENDIX O

DELINEATION OF WATERS OF THE UNITED STATES

Delineation of Waters of the United States

Greenbriar ±569-Acre Site and Associated Utility Alignments
Sacramento County, California

Prepared for: U.S. Army Corps of Engineers

Contracted By: AKT Development Corporation

November 3, 2005

Submitted by:



© 2005

Table of Contents

1.0 Introduction	1
2.0 Regulatory Background.....	2
2.1 Waters of the United States	2
3.0 Methodology	3
3.1 Site-Specific References.....	3
3.2 Research and Field Methodology	4
3.3 GPS Data Integration.....	4
4.0 Results	6
4.1 Study Area Description, Land Use.....	6
4.1.1 Study Area Location.....	6
4.1.2 Land Use.....	6
4.1.3 Site History and Description.....	6
4.2 Physical Features.....	7
4.2.1 Soils.....	7
4.2.2 Topography.....	10
4.2.3 Regional Hydrology.....	10
4.2.4 Site-Specific Hydrology.....	10
4.3 Vegetation	11
4.3.1 Agricultural Cropland.....	11
4.3.2 California Annual Grassland Alliance.....	11
4.3.3 Seasonal Wetland.....	12
4.3.4 Seasonal Marsh.....	12
4.3.5 Perennial Marsh	12
4.4 Classification of Waters of the United States.....	13
4.4.1 Depressional Seasonal Wetland.....	13
4.4.2 Depressional Seasonal Marsh.....	13
4.4.3 Depressional Perennial Marsh	13
4.4.4 Ditch/Canal.....	14
4.4.5 Excavated pond.....	14
5.0 References	16

List of Tables

Table 1 — Waters of the U.S: Acreage According to Feature	15
---	----

List of Figures

Figure 1 — Site and Vicinity	18
Figure 2 — Soils	19
Figure 3 — Delineation Map	20

List of Appendices

Appendix A — Contact Information	
Appendix B — Routine Wetland Determination Data Form	

1.0 INTRODUCTION

The purpose of this document is to present the results of a formal delineation of jurisdictional waters of the United States, including wetlands, on the ±569-acre Greenbriar site and utility alignments located in northwestern Sacramento County, California (**Figure 1**).

This report presents the results of Foothill Associates review of available literature, aerial photographs, soil surveys, and fieldwork on the site. These results are summarized to depict jurisdictional waters of the United States following the technical guidelines provided in the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual for identifying wetlands and distinguishing them from aquatic habitats and other nonwetlands.

The delineation methodology is described in this report, followed by the results of the delineation. Details regarding soils, topography, hydrology, and vegetation are summarized and routine wetland determination data forms are provided in **Appendix B**. A detailed delineation map illustrates waters of the U.S. on the site (**Figure 3**).

2.0 REGULATORY BACKGROUND

The U.S. Army Corps of Engineers (Corps) regulates discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act (CWA).

“Discharges of fill material” is defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. §328.2(f)]. In addition, Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

2.1 Waters of the United States

Waters of the U.S. include a wide range of features such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs and wet meadows as well as tributaries to such features. The term tributary generally refers to a feature which contributes its waters to another feature (example: a stream that flows into a larger river is a tributary to that river). Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and non-tidal waters are described below.

Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit positive indicators of three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the “normal circumstances” for the site.

The lateral extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the Corps as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” [33 C.F.R. §328.3(e)].

3.0 METHODOLOGY

3.1 Site-Specific References

Available information pertaining to the natural resources of the region was reviewed. All references reviewed for this delineation are listed in Section 5.0. Pertinent site-specific reports and general references utilized concurrent with the delineation include the following:

- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS;
- GretagMacbeth. 2000. *Munsell Soil Color Charts*. New Windsor, NY;
- Hickman, James C. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, CA;
- Reed, P.B., Jr. 1988. *National List of Plant Species That Occur in Wetlands: California (Region O)*; U.S. Fish & Wildlife Service;
- USDA, NRCS (Natural Resource Conservation Service). 1993. *Soil Survey of Sacramento County, California*. USDA, NRCS, in cooperation with the Regents of the University of California (Agricultural Experiment Station);
- USDA, NRCS. 2003. *Field Indicators of Hydric Soils in the United States*, Version 5.01. G.W. Hurt, P.M. Whited, and R.F. Pringle (Eds). USDA, NRCS in cooperation with the National Committee for Hydric Soils. Fort Worth, TX;
- USDA, NRCS (Natural Resource Conservation Service). 1937. *Historic Aerial Photo Coverage of Sacramento County, California*. USDA, NRCS;
- USDA, NRCS (Natural Resource Conservation Service). 1957. *Historic Aerial Photo Coverage of Sacramento County, California*. USDA, NRCS;
- U.S. Geological Survey. 1954. *Davis, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1905. *Davisville, California*. 15 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1967. *Taylor Monument, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1967. Photorevised 1975. *Taylor Monument, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior; and

- U.S. Geological Survey. 1967. Photorevised 1980. *Taylor Monument, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior.

3.2 Research and Field Methodology

This delineation utilized the Corps 1987 three-parameter (vegetation, hydrology, and soils) methodology to delineate jurisdictional waters of the U.S., focusing specifically on jurisdictional wetlands. This methodology requires the collection of data on soils, vegetation, and hydrology at several locations to establish the jurisdictional boundary of wetlands. Additional methods to identify and delineate other waters of the U.S. (e.g. streams, drainages, lakes, etc.) were used as applicable.

A review of historic and current aerial photographs, topographic maps and soils survey data was conducted before delineating the site on December 28th, 2004 as well as concurrently with delineation work on January 4th, July 7th, August 15th, August 22nd and October 3rd, 2005. Wetland biologists visually inspected the entire site and collected data on vegetation and hydrology. Soils were also examined and correlations were developed between the three parameters to make wetland determinations. Specifically, data points were evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species (as determined by the U.S. Fish and Wildlife Service National List of Plant Species that Occur in Wetlands: 1988 California (Region 0)) was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. Additionally, immediate sub surface soils conditions were examined for hydric attributes or a lack thereof. Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. In addition to sampling representative wetland types, routine determination data points were collected within the interior portions of the site currently or historically used for agricultural activities in order to collect baseline data for all of the mapped soils types occurring on the site. The routine determination points were collected in January, July and August of 2005. The location of each data point is depicted in **Figure 3** and corresponding routine wetland determination data forms are provided in **Appendix B**.

As part of the fieldwork, we also visually inspected several offsite areas to determine the surface hydrological connection between the ditches on the site. Several culverts and other water conveyance features were mapped during the delineation illustrated in **Figure 3**.

3.3 GPS Data Integration

Boundaries of wetlands and other waters of the U.S. within the site were surveyed and mapped with a Trimble GeoXT GPS (Global Positioning System) hand-held unit. This is a mapping-grade GPS unit capable of real-time differential correction and sub-meter accuracy. The GPS data were downloaded from the unit and differentially corrected utilizing Trimble Pathfinder Office software and appropriate base station data, and then converted to ESRI ® shape file format. Data are typically exported to the Geographic

Information System (GIS) software in the State Plane coordinate system (NAD 83) with units as "survey feet." Within the GIS, data are edited and linear features are built into polygons using recorded width information. All wetland shape files are merged to create a single wetland file with calculated acreages. These results are presented in **Figure 3**.

4.0 RESULTS

4.1 Study Area Description, Land Use

4.1.1 Study Area Location

The ±569 acre site and associated utility alignments are located in northwestern Sacramento County, approximately two miles southeast of the Sacramento International Airport and two miles northeast of Sacramento River. The site is bound by Interstate 5 on the south, State Highways 70/99 on the east, and Elkhorn Boulevard on the north. The utility alignments include areas along the south edge of Elkhorn Boulevard, east to Natomas Boulevard and the east edge of the site, south along State Route 99. The site is bound on the west by rural residences and agricultural lands. The site is located within Townships 9 and 10 North, Range 4 East and occupies portions of sections 4 and 33 of the U.S.G.S. Taylor Monument 7.5' quadrangle map (**Figure 1**).

4.1.2 Land Use

The site is currently in agricultural use, with dry farmed wheat. A portion of the site was in rice cultivation until 2002. A horse race track and an irrigated polo field were present in the northern portion of the site from approximately 1980 to the early 2000's. For several years the horse ranch subleased the northwest corner of the property to a highway construction company, who stored equipment there. For at least the last 20 years, the remainder of the property outside the horse ranch area has been in agricultural use (rice, sugar beets, wheat).

4.1.3 Site History and Description

A review of historic aerial imagery indicates the site has been utilized for agricultural activities, mainly rice production, since 1937. The site was planted in rice as recently as 2002, according to review of aerial imagery. A conversation with the land manager confirmed that the site was planted with rice in 2003 and 2004, as well. In the 2005 growing season the site was planted with wheat (Johas, pers. comm.). At the cessation of this year's crop harvesting activities, the majority of the site was disced. Areas not disced within the site during the initial stage of the delineation include the following two locations: the northwestern portion of the site west of the equestrian track and north of ditch feature #14, west to the site boundary and continuing north to Elkhorn Boulevard; the northeastern portion of the site south of Elkhorn Boulevard and north and west of the ditch and canal segments labeled #13 and #21, respectively (**Figure 3**).

The natural hydrologic regime on the site has been altered to facilitate agricultural production processes since at least 1937 and is discussed in detail in section 4.2.4. The predominant features constructed on the site for water conveyance include ditches and canals. During past periods of rice cultivation, an extensive network of checks and berms

also existed on the site. These features were deconstructed in coincidence with the cessation of rice cultivating activities on the site which occurred as recently as 2004.

Soils on the site developed in an area that appears to have historically supported wetlands based on a review of the 1937 aerial photographs. Therefore, hydric soil indicators documented on the site may be the result of natural, historic conditions. However, the production of rice over a large portion of the site and over a long period of time has likely contributed to the current condition of soils on the site, potentially including the presence of secondary indicators of wetland hydrology and hydric soil indicators. Consequently, the soils may not be a reliable indicator of current conditions.

4.2 Physical Features

4.2.1 Soils

The Natural Resources Conservation Service (NRCS) has identified and mapped eight soils occurring on the site and associated utility alignments (**Figure 2**): **Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes, Cosumnes silt loam, partially drained, 0 to 2 percent slopes, Durixeralfs, 0 to 1 percent slopes, Jacktone clay, drained, 0 to 2 percent slopes, San Joaquin silt loam leveled, 0 to 1 percent slopes, San Joaquin-Durixeralfs complex, 0 to 1 percent slopes and San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes.** General characteristics and properties associated with these soils are described below.

- **Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes:** This deep to very deep artificially drained soil is located in basins between five to 30 feet above Mean Sea Level (MSL). A system of levees and large upstream dams has reduced the hazard of flooding. The construction of levees, drainage ditches and pumps has lowered the water table and altered the drainage of the soil. This soil formed from fine textured alluvium derived from mixed rock sources. Permeability is slow, available water capacity is moderate and runoff is very slow. This soil is subject to rare flooding and is typically used for irrigated crops such as rice, corn, tomatoes, sugar beets and wheat. Vegetation in uncultivated areas mainly consists of annual grasses and herbaceous species. The hydric soils list for Sacramento County identifies on type of hydric inclusion occurring within this soil type: Cosumnes, located on the low floodplain. The hydric soils list for Sacramento County also identifies one type of hydric component occurring within this soil type: Clearlake, located on basin floors.
- **Cosumnes silt loam, partially drained, 0 to 2 percent slopes:** This very deep, artificially drained soil is located on low floodplains at elevation between five to 20 feet above MSL. A system of levees and large upstream dams has reduced the hazard of flooding. Levees, open and closed drains and pumps have lowered the water table and altered the drainage of the soil. This soil formed in somewhat poorly drained alluvium derived from mixed rock sources. Permeability is slow, available water capacity is high and runoff is slow. This soil is subject to rare

flooding and is typically used for irrigated crops such as rice, corn, tomatoes, sugar beets and wheat. Vegetation in uncultivated areas mainly consists of annual grasses and herbaceous species. The hydric soils list for Sacramento County identifies three types of hydric inclusions occurring within this soil type: Clearlake, located on basin floors, Columbia, located on the low floodplain and Sailboat, located on the low floodplain. The hydric soils list for Sacramento County also identifies one type of hydric component occurring within this soil type: Cosumnes, located on the low floodplain.

- **Durixeralfs, 0 to 1 percent slopes:** This soil unit is a shallow or moderately deep, well drained, altered soil located on low terraces between 20-150 feet above MSL. Most of the entire original surface layer has been removed. The soils developed from alluvium derived from mixed granitic rocks. Slopes are plane due to artificial leveling. Water permeability is slow to very slow, available water capacity is very low or low and runoff is very slow. This soil unit is used for irrigated hay and pasture or for irrigated crops. Typically, vegetation in uncultivated areas within this soil unit consists of non-native annual grasses and herbaceous plant species. The hydric soils list for Sacramento County does not identify any hydric inclusions or components occurring within this soil unit.
- **Jacktone clay, drained, 0 to 2 percent slopes:** This moderately deep, artificially drained soil is located in high areas in basins between 10-25 feet above MSL. It is protected against flooding by a system of levees and large upstream dams. The construction of levees, drainage ditches and pumps has lowered the water table and altered the drainage of the soil. This soil formed in alluvium derived from mixed rock sources. Permeability is slow, available water capacity is moderate and runoff is very slow. This soil is subject to rare flooding. This soil is typically used for irrigated crops such as rice, barley, wheat and corn. Vegetation in uncultivated areas mainly consists of annual grasses and herbaceous species. The hydric soils list for Sacramento County identifies two types of hydric inclusions occurring within this soil type: Cosumnes, located on the low floodplain, and Clearlake, located on basin floors. The hydric soils list for Sacramento County also identifies one type of hydric component occurring within this soil type: Jacktone, located on basin rims.
- **San Joaquin silt loam, leveled, 0 to 1 percent slopes:** This soil unit is located on low terraces at an elevation of 20 to 125 feet above MSL. Slopes are plane due to land leveling processes. San Joaquin silt loam is a moderately deep, moderately well drained soil formed in alluvium derived from dominantly granitic rocks. Permeability is very slow, available water capacity is low and runoff is very slow. Vegetation typically found on this soil unit consists of non-native annual grasses and herbaceous plant species, and a few scattered native oaks (*Quercus* spp.). The hydric soils list for Sacramento County does not identify any hydric inclusions within this soil type.
- **San Joaquin silt loam, 0 to 3 percent slopes:** This soil unit is located on low terraces. San Joaquin silt loam is a moderately deep, moderately well drained soil

formed in alluvium derived from dominantly granitic rocks. Permeability is very slow, available water capacity is low and runoff is very slow. Vegetation typically found on this soil unit consists of non-native annual grasses and herbaceous plant species, and a few scattered native oaks (*Quercus* spp.). The hydric soils list for Sacramento County identifies one type of hydric inclusion occurring within this soil type: Galt, located within depressions.

- **San Joaquin-Durixeralfs complex, 0 to 1 percent slopes:** This soil complex is located on low terraces at elevations of 20 to 100 feet above MSL. Slopes are plane due to land leveling processes. The San Joaquin soil is a moderately deep, well drained soil formed in alluvium derived from granitic rock. Permeability is very slow, available water capacity is low and runoff is very slow. The Durixeralfs formed in alluvium derived from mixed granitic rocks and are shallow or moderately deep, well drained and altered. Permeability is slow or very slow in the Durixeralfs, available water capacity is very low or low and runoff is very slow. Vegetation typically associated with uncultivated portions of this soil complex is typically composed of annual grasses and herbaceous plant species. The hydric soils list for Sacramento County identifies one type of hydric inclusion occurring within this soil type: Galt, located within depressions.
- **San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes:** This soil complex is located on low terraces at elevations of 20 to 125 feet above MSL. Slopes are plane due to land leveling processes. The San Joaquin soil is a moderately deep, moderately well drained soil formed in alluvium derived from granitic rock. Permeability is very slow, available water capacity is low and runoff is very slow. The Xerarents are moderately deep to very deep, well drained and altered and formed in fill material mixed by leveling processes. The fill material is derived from mixed but predominantly granitic rock sources. Permeability is moderate to very slow in the Xerarents, available capacity is moderate or high and runoff is very slow. Prior to leveling, areas with these soils consisted of depressions and narrow channels along drainageways. Typically, areas with these soils are used for irrigated crop production. Vegetation associated with uncultivated portions of this soil complex is primarily composed of annual grasses and herbaceous plant species. The hydric soils list for Sacramento County identifies four types of hydric inclusions occurring within this soil type: Galt, located in depressions; Clearlake, located on basin floors; Columbia, located on low floodplains and Sailboat, located on low floodplains.

In summary, and according to the hydric soils list and soil survey for Sacramento County, the following hydric soil inclusions and/or components and the landform types they are associated with are listed as occurring within six of the eight soil types mapped by NRCS: Columbia hydric inclusions that are located on the low floodplain, Cosumnes hydric inclusions that are located on the low floodplain, Clearlake hydric inclusions that are located on basin floors, Galt hydric inclusions that are located in depressions, Sailboat hydric inclusions that are located on the low floodplain, hydric components of Clearlake that are located on basin floors, hydric components of Cosumnes that are located on the

low floodplain, hydric components of Jacktone that are located on basin rims and hydric components of Galt that are located within depressions.

4.2.2 Topography

The natural topography of the site has been altered to facilitate agricultural production processes. Historically, the site was largely flat and is located in an area that was part of the original floodplain of the Sacramento River. Throughout the past several decades, the site has been repeatedly leveled, drained and/or disced for the process of rice production and most recently for wheat production. Other common agricultural maintenance activities or practices influencing the topography and drainage on the site include ditching and mechanical harvesting processes. The slopes throughout the site range from approximately 0 to 2 percent. The elevation on the site ranges from approximately 11 to 22 feet above MSL.

4.2.3 Regional Hydrology

The site is located in the Natomas Basin approximately two miles northeast of Sacramento River within the northern Sacramento Valley portion of the Great Central Valley. Historically, the Sacramento River and many of its main tributaries flooded seasonally, creating areas that remained inundated for substantial periods during the rainy season. As a result, large-scale flood-control projects, diversion dams, and water-control structures were built on tributary rivers entering the valley in the 1930's. As a result of the construction of these fortified structures, natural flooding events were reduced in frequency and intensity. As the demand for agricultural production processes in the region increased, the development of a complex system of canals and ditches to maximize water conveyance and storage ensued. A review of the U.S.G.S. Davisville topographic map of 1905 indicates that the site is within the former location of historic Bush Lake which was drained as a result of the construction of the Natomas Drainage Canal.

4.2.4 Site-Specific Hydrology

The site is within the historic 100-year floodplain (FEMA, 1996) of Sacramento River. The hydrologic regime on the site is supplemented by seasonal storm water run off and precipitation, primarily between November and March. The majority of seasonal surface run off is conveyed throughout the site via altered, leveled topography and/or artificial water conveyance features such as ditches and canals. The hydrology of the site has been altered for the conveyance of water to, from, and throughout the site via a network of ditches and canals in order to facilitate agricultural production processes. Hydrologic features identified and mapped within the site include the following: depressional seasonal wetland, depressional seasonal marsh, depressional perennial marsh, excavated pond and ditch/canal (**Figure 3**). Diagnostic characteristics of the features mapped on the site are defined and discussed in Section 4.4.

The ditches and canals on the site are physically connected to the West Drainage canal via a series of culverts, and the West Drainage Canal is tributary to Sacramento River.

However, not all the ditches appear to be functionally connected via natural flows to or from the West Drainage Canal, specifically features #46, #48 and #49. The ditches are man made and appear to constitute the remnants of artificial water conveyance facilities associated with past agricultural practices on the site. As a result, these features or a portion or portions thereof may be considered non-jurisdictional by the Corps.

The Final Natomas Basin Habitat Conservation Plan has identified and described the ditches/canals along the western, southern and eastern site boundary as part of a water *drainage* system, and the ditches within the interior site boundary are identified as part of a water *delivery* system. At no time was standing or flowing water observed within these interior, remnant ditches that are classified as part of a water delivery system.

The depressional seasonal wetlands on the site are characterized by saturation rather than inundation. The depressional seasonal marshes are seasonally inundated or saturated, but inundation/saturation persists for some period into the warm season. The depressional perennial marshes are depressions that typically remain inundated or saturated throughout the year. The excavated ponds are supplied by seasonal precipitation and are isolated from any other wetlands or waters.

4.3 Vegetation

The vegetation assemblages and habitat types occurring on the site include the following: agricultural cropland, California annual grassland alliance, depressional seasonal wetland, depressional seasonal marsh and depressional perennial marsh.

4.3.1 Agricultural Cropland

The majority of the site is composed of leveled agricultural cropland (wheat). According to the land manager, the wheat crop was planted in November of 2005 and harvested in July 2005.

4.3.2 California Annual Grassland Alliance

California annual grassland alliance consists of a myriad of native and non-native annual plant species and occurs in a majority of the state at elevations from sea level to approximately 4,000 feet above MSL. Composition of this vegetation community varies depending on distribution, geographic location and land use. Additional major influences on this vegetation community include soil type, annual precipitation and fall temperatures. Dominant plant species within the California annual grassland on the site include the following: Italian ryegrass (*Lolium multiflorum*), soft brome (*Bromus hordeaceus*), wild oat (*Avena* sp.), mouse-tail grass (*Vulpia myuros*), medusahead (*Taeniatherum caput-medusae*), long-beaked filaree (*Erodium botrys*), woodland geranium (*Geranium molle*), chick weed (*Stellaria media*), milk thistle (*Silybum marianum*), star thistle (*Centaurea solstitialis*), barley (*Hordeum murinum* ssp. *leporinum*), wild oat (*Avena* sp.), clover (*Trifolium* sp.) and shepherd's purse (*Capsella bursa-pastoris*). California annual grassland alliance occurs primarily in between the

leveled agricultural fields, along the berms above the ditches and canals on the site and along the maintenance roads as well as the upland areas outside of the agricultural fields.

4.3.3 Seasonal Wetland

The depressional seasonal wetlands on the site support hydrophytic vegetation. Depressional seasonal wetlands are depressions within the topography that inundate or saturate for short periods of time following intense rains but do not maintain seasonal aquatic or saturated soils conditions for durations long enough for colonization by perennial, obligate plant species. As such, plant species in seasonal wetlands are generally of two types: species that can tolerate short periods of inundation but have not adapted to withstand sustained aquatic or saturated soils conditions, and short-lived (primarily annual) species that take advantage of ephemeral aquatic and/or saturated soils conditions. Plant species observed occurring within the seasonal wetlands on the site and in the associated utility alignments include Italian ryegrass, Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), vernal pool buttercup (*Ranunculus bonariensis* var. *trisepalus*) and nutsedge (*Cyperus esculentus*). The depressional seasonal wetlands are concentrated in the northern and central portions of the site.

4.3.4 Seasonal Marsh

Cattail alliance occurs throughout the state of California in brackish, alkali or freshwater marshes from sea level to approximately 6,500 feet above MSL. Typically, cattail alliance occurs in intermittently or permanently flooded wetlands, such as the depressional perennial marsh in the northwestern portion of the site. The diagnostic species of this vegetation alliance is cattail (*Typha latifolia*), which is a hydrophytic species. Associates vary widely depending on length of inundation/saturation during the year as well as seasonal temperatures and water chemistry. On the site, sand bar willow (*Salix exigua*) and smartweed (*Polygonum* sp.) are common associates of this alliance. This vegetation alliance also occurs within the depressional seasonal marsh located along the eastern site boundary.

4.3.5 Perennial Marsh

The depressional perennial marshes on the site support hydrophytic vegetation. Depressional perennial marsh is located in the northwestern portion of the site within the center of the equestrian track. The marsh is supplied by a ditch which conveys water into the marsh via a subsurface conveyance feature and culverts. A review of historical photographs indicates that this feature was created on the site as part of the equestrian track design and/ or maintenance function. The dominant tree species in the marsh, which appears to have been red willow (*Salix laevigata*), had been recently cut down prior to conducting the wetland delineation. Sand bar willow is common along the boundary and within the margins of this feature. Emergent aquatic plant species such as cattail and floating aquatics such as duckweed (*Lemna* sp.) and knotweed also occur in this area. Dense interspersed stands of Himalayan blackberry (*Rubus discolor*) occur with regular frequency along the boundary of this feature, as well.

4.4 Classification of Waters of the United States

As discussed previously in section 2.0, jurisdictional waters of the U.S. are classified into multiple types based on topography, edaphics (soils), vegetation and hydrologic regime. Primarily, the Army Corps of Engineers establishes two distinctions: wetland and non-wetland waters of the U.S. Non-wetland waters are commonly referred to as other waters. Potential jurisdictional wetland types mapped within the site include the following: depressional seasonal wetland, depressional seasonal marsh and depressional perennial marsh.

Potential other waters of the U.S. delineated within the site include the following: ditch/canal. In addition, the ponds on the site were identified as excavated in uplands and interpreted as potentially non jurisdictional features. A description of all of the features delineated within the site is provided in the following sections.

4.4.1 Depressional Seasonal Wetland

A total of **4.68** acres of depressional seasonal wetland have been delineated on the site. Depressional seasonal wetlands are defined by a hydrologic regime characterized by saturation rather than inundation. Depressional seasonal wetlands were identified on the site as topographic depressions with a hydrologic regime characterized by saturation and capable of supporting hydrophytic plant species and hydric soils. Plant species in depressional seasonal wetlands are adapted to withstand short periods of saturation or saturated soils conditions but will not withstand prolonged periods of inundation, as is common in vernal pools. The depressional seasonal wetlands on the site support wetland soils, vegetation, and hydrology, and would likely be regulated by the Corps. Depressional seasonal wetlands are located in the northern central portion of the site (**Figure 3**).

4.4.2 Depressional Seasonal Marsh

A total of **0.31**-acre of depressional seasonal marsh has been delineated on the site. Depressional seasonal marshes are wetlands that are seasonally inundated or saturated, but inundation/saturation persists through the majority of the warm season. The persistence of inundation/saturation into the warm season permits the growth of primarily perennial herbaceous plant species capable of withstanding extended periods of inundation or saturated soil conditions. In the Great Central Valley, these features are typically located on the fringes of naturally occurring or artificially created impoundments, such as ponds or reservoirs. These features may also be associated with slow moving riverine systems where natural and/or artificial flows persist into the warm season. The depressional seasonal marsh on the site exhibits wetland characteristics.

4.4.3 Depressional Perennial Marsh

A total of **1.34** acres of depressional perennial marsh have been delineated on the site. Depressional perennial marshes can occur as the result of natural and/or artificial water flows associated with agricultural or residential water uses. Depressional perennial

marshes are dominated by inundation. Typically, depressional perennial marshes remain inundated or saturated throughout the year. The persistence of inundation/saturation throughout the year permits the growth of warm-season wetland grasses and perennial herbaceous plant species. Within the Central Valley, depressional perennial marshes typically occur in association with the lowland terminus of local riverine watersheds or as the result of artificial excavation activities in low lying areas exhibiting historic hydric soils conditions, often resulting in artificially created impoundments, such as ponds or reservoirs.

The depressional perennial marsh is located within the abandoned equestrian racetrack in the northwestern portion of the site. It exhibits wetland characteristics and is connected via a series of culverts to a network of ditches/canals on the site which are connected to jurisdictional waters (Sacramento River) off site. The depressional seasonal marsh is therefore presumed to be a Corps jurisdictional wetland.

4.4.4 Ditch/Canal

A total of **11.64** acres of ditch/canal have been delineated on the site. Non-tributary water conveyance features excavated in uplands and constructed for the transport and distribution of groundwater between agricultural fields are not jurisdictional features unless the Corps determines and claims jurisdiction on a case-by-case basis. Water conveyance features excavated in uplands and constructed for transport and distribution of surface water between agricultural fields may be jurisdictional features, specifically if they are tributary to known waters of the U.S.

An additional **0.72** acre of ditches/canals was delineated on the site and are not connected to any other water conveyance feature on or off of the site. At no time was standing or flowing water observed within the interior remnant ditches on the site. As a result, these features or a portion or portions thereof may be considered non-jurisdictional by the Corps. However, the Corps reviews these situations on a case-by-case basis. The ditches/canals are located throughout the interior of the site and along the eastern, western and southern site boundaries. Because of the lack of connectivity, we have identified these features as non-jurisdictional.

4.4.5 Excavated pond

A total **0.34**-acre of excavated pond has been delineated on the site. There are two excavated ponds in the northern-central portion of the site. Ponds are typically the result of the deliberate impoundment of water through artificial damming. When stock ponds occur as the result of the construction of artificial impoundment features that restrict or stop the flow of jurisdictional waters of the U.S., the resulting pond becomes jurisdictional to the limits of the ordinary high water mark or wetland boundary. Conversely, ponds wholly excavated in uplands and supplied by surface run off or groundwater are not jurisdictional features. The ponds on the site are excavated and are not the result of the impoundment of a natural drainageway. Nor are the excavated ponds tributaries to or from any waters of the U.S. The hydrology of the ponds is supplied by

seasonal precipitation. Therefore, the Corps will not likely assert jurisdiction of these features.

Table 1 below provides acreage per class and summarizes the total acreage of wetlands and waters on the site.

Table 1 — Waters of the U.S: Acreage According to Feature

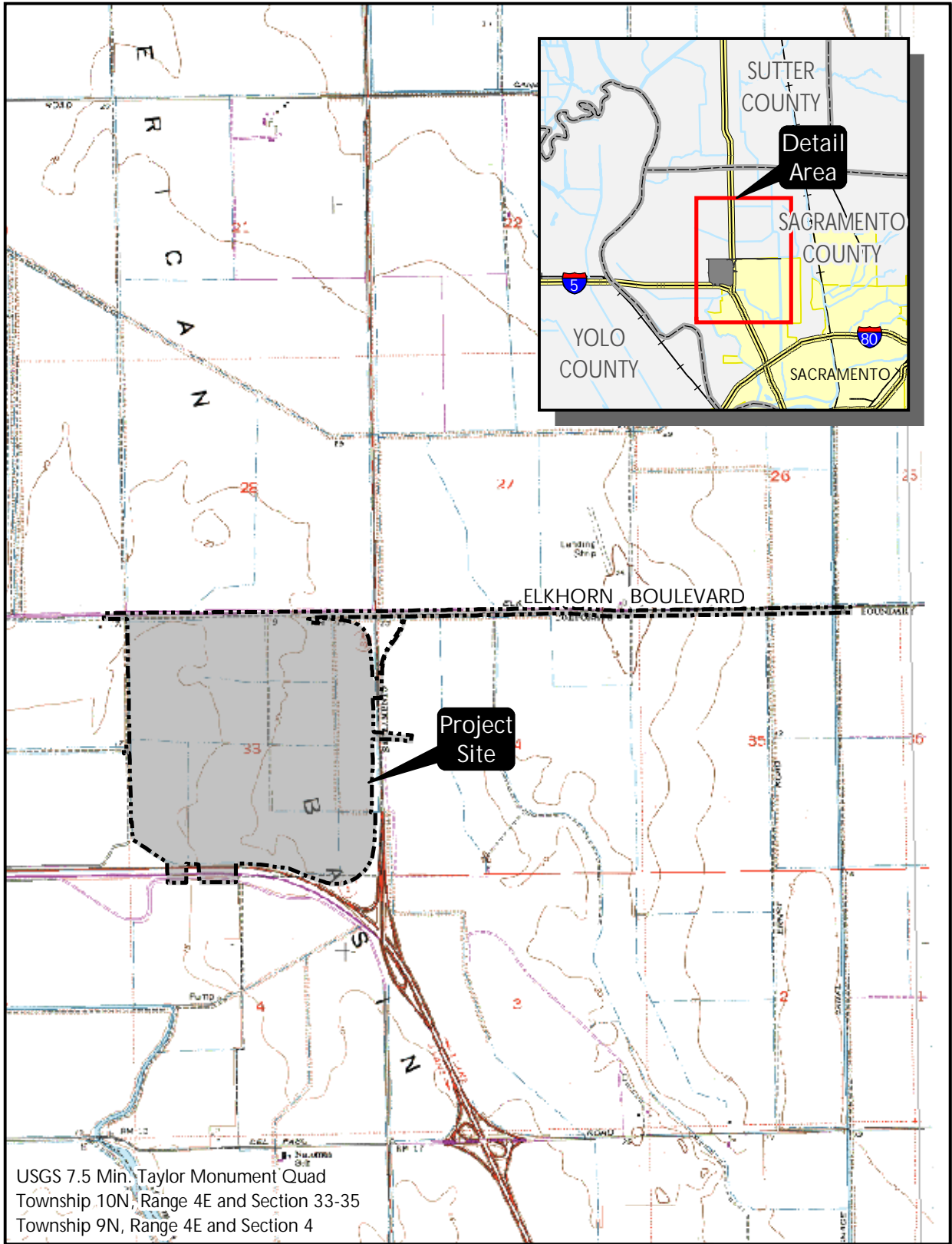
CLASS	TOTAL ACREAGE	JURISDITIONAL	NON- JURISDITIONAL
Depressional Seasonal Wetland	4.68	4.68	0.0
Depressional Seasonal Marsh	0.31	0.31	0.0
Depressional Perennial Marsh	1.34	1.34	0.0
Ditch/Canal	12.36	11.64¹	0.72
Excavated Pond	0.34	0	0.34
TOTAL	19.03	17.97	1.06

¹ Ditches and canals may not be jurisdictional.

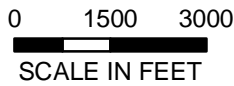
5.0 REFERENCES

- City of Sacramento. 2003. Errata to the Final Natomas Basin Habitat Conservation Plan. Sacramento, CA;
- Environmental Laboratories. 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS;
- Federal Emergency management Agency (FEMA). 1996. National Flood Insurance Program Q3 Flood Data, Disc 1: California;
- Gretag Macbeth. 2000. Munsell Soil Color Charts. New Windsor, NY;
- Hickman, James C. 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley, CA;
- Hitchcock, A.S. 1935. Revised 1971. Manual of the Grasses of the United States. U.S. Department of Agriculture, Dover Publications, NY;
- Hitchcock, Leo C. and Arthur Cronquist. 1996. Flora of the Pacific Northwest. University of Washington Press, Seattle, WA;
- Mason, Herbert L. 1957. A Flora of the Marshes of California. University of California Press, Berkeley, California;
- Munz, Phillip A. 1968. A California Flora and Supplement. University of California Press, Berkeley, CA;
- Natural Resource Conservation Service (NRCS). March 1992. Hydric Soils List for Sacramento County, California. U.S. Department of Agriculture;
- Natural Resource Conservation Service (NRCS). 1993. Soil Survey of Sacramento County, California. U.S. Department of Agriculture;
- Reed, P.B., Jr. 1988. National List of Plant Species That Occur in Wetlands: California (Region O); U.S. Fish & Wildlife Service;
- Sawyer, John O. and Todd Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society (CNPS), Sacramento, CA;
- USDA, NRCS. 2003. Field Indicators of Hydric Soils in the United States, Version 5.01. G.W. Hurt, P.M. Whited, and R.F. Pringle (eds). USDA, NRCS in cooperation with the National Committee for Hydric Soils. Fort Worth, TX;
- USDA, NRCS. 1937. Historic Aerial Photo Coverage of Sacramento County, California. USDA, NRCS;

- USDA, NRCS. 1957. Historic Aerial Photo Coverage of Sacramento County, California. USDA, NRCS;
- U.S. Geological Survey. 1954. Davis, California. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1905. Davisville, California. 15 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1967. Taylor Monument, California. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1967. Photorevised 1975. Taylor Monument, California. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior; and
- U.S. Geological Survey. 1967. Photorevised 1980. Taylor Monument, California. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior.

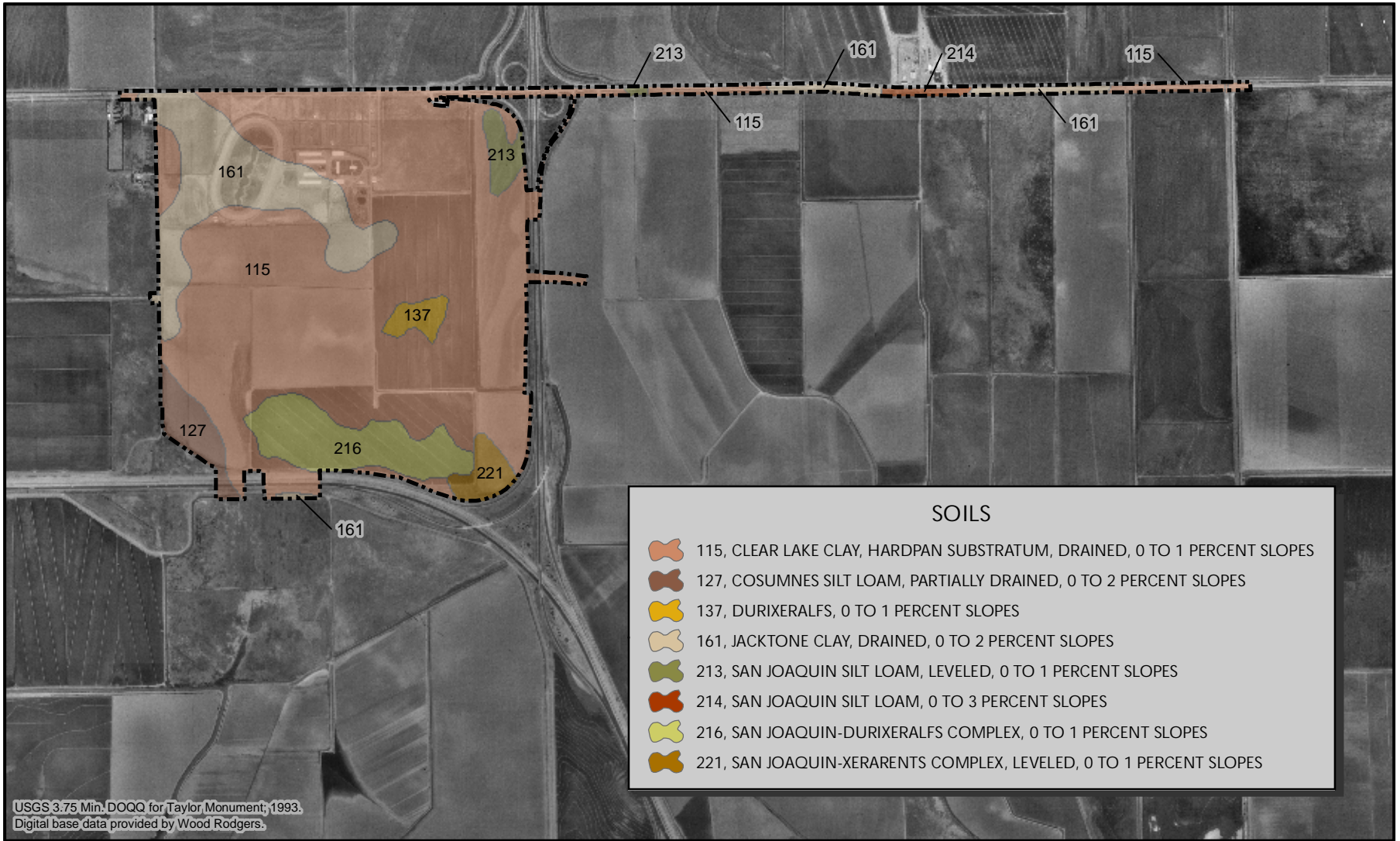


SITE AND VICINITY



Drawn By: AH
 Date: 10/17/05

FIGURE 1



SOILS



38° 41 Min 8 Sec N
-121° 33 Min 35 Sec W

ELKHORN BOULEVARD

STATE HIGHWAY 99 and 70

INTERSTATE 5

**INDIVIDUAL WOUS
FEATURE ACREAGES**

DSM LABEL	ACRES
1	0.007
2	0.008
3	0.008
4	0.011
5	0.02
6	4.688
7	0.008
8	0.005
9	0.004
10	0.002
11	0.004
12	0.002
13	0.002
14	0.004
15	0.002
16	0.002
17	0.002
18	0.002
19	0.002
20	0.002
21	0.002
22	0.002
23	0.002
24	0.002
25	0.002
26	0.002
27	0.002
28	0.002
29	0.002
30	0.002
31	0.002
32	0.002
33	0.002
34	0.002
35	0.002
36	0.002
37	0.002
38	0.002
39	0.002
40	0.002
41	0.002
42	0.002
43	0.002
44	0.002
45	0.002
46	0.002
47	0.002
48	0.002
49	0.002
50	0.002
51	0.002
52	0.002
53	0.002
54	0.002
55	0.002
56	0.002
57	0.002
58	0.002
59	0.002
60	0.002
61	0.002
62	0.002
63	0.002
64	0.002
65	0.002
66	0.002
67	0.002
68	0.002
69	0.002
70	0.002
71	0.002
72	0.002
73	0.002
74	0.002
75	0.002
76	0.002
77	0.002
78	0.002
79	0.002
80	0.002
81	0.002
82	0.002
83	0.002
84	0.002
85	0.002
86	0.002
87	0.002
88	0.002
89	0.002
90	0.002
91	0.002
92	0.002
93	0.002
94	0.002
95	0.002
96	0.002
97	0.002
98	0.002
99	0.002
100	0.002
SUBTOTAL	4.688

DSM LABEL	ACRES
1	0.002
10	0.002
15	0.002
30	0.002
35	0.002
40	0.002
45	0.002
50	0.002
55	0.002
60	0.002
65	0.002
70	0.002
75	0.002
80	0.002
85	0.002
90	0.002
95	0.002
100	0.002
SUBTOTAL	0.313

DSM LABEL	ACRES
1	1.263
SUBTOTAL	1.263

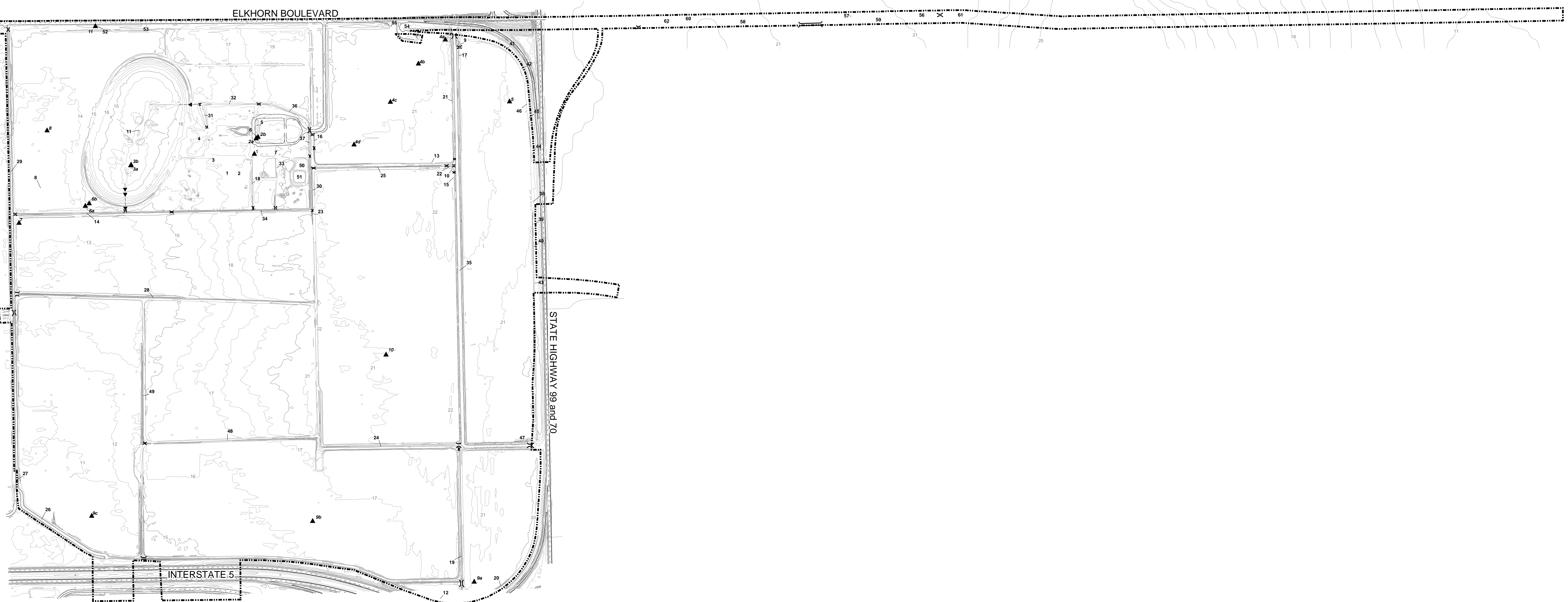
DITCH LABEL	ACRES
11	0.172
13	0.002
14	0.338
15	0.004
16	0.002
17	0.012
18	0.041
19	0.002
20	0.002
21	0.002
22	0.018
23	0.002
24	0.002
25	0.002
26	0.002
27	0.004
28	0.002
29	0.002
30	0.002
31	0.002
32	0.002
33	0.002
34	0.002
35	0.002
36	0.002
37	0.002
38	0.002
39	0.002
40	0.002
41	0.002
42	0.002
43	0.002
44	0.002
45	0.002
46	0.002
47	0.002
48	0.002
49	0.002
50	0.002
51	0.002
52	0.002
53	0.002
54	0.002
55	0.002
56	0.002
57	0.002
58	0.002
59	0.002
60	0.002
61	0.002
62	0.002
63	0.002
64	0.002
65	0.002
66	0.002
67	0.002
68	0.002
69	0.002
70	0.002
71	0.002
72	0.002
73	0.002
74	0.002
75	0.002
76	0.002
77	0.002
78	0.002
79	0.002
80	0.002
81	0.002
82	0.002
83	0.002
84	0.002
85	0.002
86	0.002
87	0.002
88	0.002
89	0.002
90	0.002
91	0.002
92	0.002
93	0.002
94	0.002
95	0.002
96	0.002
97	0.002
98	0.002
99	0.002
100	0.002
SUBTOTAL	11.644

DITCH LABEL	ACRES
45	0.303
47	0.005
48	0.150
49	0.112
50	0.008
51	0.008
52	0.004
53	0.003
54	0.003
55	0.003
56	0.003
SUBTOTAL	0.724

POND LABEL	ACRES
50	0.078
61	0.258
SUBTOTAL	0.336

TOTAL**		19.93
---------	--	-------

*Individual acreage reported to 3 significant figures. Digital GIS data file provides area in square feet as well as acres.
**Based on sum of subtotals at 2 significant figures.



JURISDICTIONAL WATERS OF THE U.S. CLASSIFICATION	ACREAGE	NON JURISDICTIONAL ACREAGE CLASSIFICATION	ACREAGE	TOTAL ACREAGE	OTHER FEATURES	NOTES
DEPRESSIONAL WETLANDS						
Seasonal Wetland	4.68			4.68	▲ Data Points	Wetland delineation subject to U.S. Army Corps of Engineers verification.
Seasonal Marsh	0.31			0.31	→ Direction of underground flow	Digital base data provided by Wood Rodgers. Contour interval is 1 foot or less.
Perennial Marsh	1.34			1.34	∩ Culvert	Eastern contours generated from 30M DEM, interval is 1 foot.
OTHER WATERS OF THE U.S.		Ditch/Canal	0.72	12.36	Off-Site Ditch/Canal	The Hydrologic Unit Code for this site is 1802109.
		Excavated Pond	0.34	0.34	Site Boundary	This wetland delineation utilizes the Corps' 1987 three-parameter methodology to delineate jurisdictional waters of the U.S.
TOTAL	17.97	TOTAL	1.06	19.03		Wetlands and other waters of the U.S. were mapped using a Trimble GPS Global Positioning System).

SCALE IN FEET

GREENBRIAR

WETLAND DELINEATION

FOOTHILL ASSOCIATES

ENVIRONMENTAL CONSULTING • PLANNING
LANDSCAPE ARCHITECTURE

© 2005

DATE: 04/20/05	FILE NAME: wetland_delineation_100505.mxd
REVISION: 10/06/05	DRAWN BY: DBV/BFAH
	DELINEATED BY: C.J.S. RHB, BCM

FIGURE 3

Appendix A — Contact Information

Client Contact Information: Niki Doan
AKT Development Corporation
7700 College Town Drive, Suite 101
Sacramento, CA 95826 -2397

Delineation Conducted by: Brian Mayerle, Biologist
Cristian Singer, Botanist
Foothill Associates
655 Menlo Drive, Suite 100
Rocklin, CA 95765-3718

Appendix B — Routine Determination Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____
Percent of Species that are OBL, FACW or FAC (excluding FAC-).	
Remarks:	

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0.5px solid black;"/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

Percent of Species that are OBL, FACW or FAC (excluding FAC-): _____

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0.5px solid black;"/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type?	Yes No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

Percent of Species that are OBL, FACW or FAC
(excluding FAC-).

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 1px solid black;"/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____																
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Do Normal Circumstances exist on the site?</td> <td style="width: 10%;">Yes</td> <td style="width: 10%;">No</td> <td style="width: 30%;"></td> </tr> <tr> <td>Is the site significantly disturbed (Atypical Situation)?</td> <td>Yes</td> <td>No</td> <td>Community ID: _____</td> </tr> <tr> <td>Is the area a potential Problem Area? (If needed, explain on reverse.)</td> <td>Yes</td> <td>No</td> <td>Transect ID: _____</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Plot ID: _____</td> </tr> </table>	Do Normal Circumstances exist on the site?	Yes	No		Is the site significantly disturbed (Atypical Situation)?	Yes	No	Community ID: _____	Is the area a potential Problem Area? (If needed, explain on reverse.)	Yes	No	Transect ID: _____				Plot ID: _____	
Do Normal Circumstances exist on the site?	Yes	No															
Is the site significantly disturbed (Atypical Situation)?	Yes	No	Community ID: _____														
Is the area a potential Problem Area? (If needed, explain on reverse.)	Yes	No	Transect ID: _____														
			Plot ID: _____														

VEGETATION

<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Dominant Plant Species</th> <th style="text-align: left; border-bottom: 1px solid black;">Stratum</th> <th style="text-align: left; border-bottom: 1px solid black;">Indicator</th> </tr> </table>	Dominant Plant Species	Stratum	Indicator	<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Associate Plant Species</th> <th style="text-align: left; border-bottom: 1px solid black;">Stratum</th> <th style="text-align: left; border-bottom: 1px solid black;">Indicator</th> </tr> </table>	Associate Plant Species	Stratum	Indicator
Dominant Plant Species	Stratum	Indicator					
Associate Plant Species	Stratum	Indicator					
1. _____	9. _____						
2. _____	10. _____						
3. _____	11. _____						
4. _____	12. _____						
5. _____	13. _____						
6. _____	14. _____						
7. _____	15. _____						
8. _____	16. _____						
Percent of Species that are OBL, FACW or FAC (excluding FAC-): _____							
Remarks:							

HYDROLOGY

<p>Recorded Data (Describe in Remarks):</p> <p style="padding-left: 20px;">Stream, Lake, or Tide Gauge</p> <p style="padding-left: 20px;">Aerial Photographs</p> <p style="padding-left: 20px;">Other</p> <p style="padding-left: 20px;">No Recorded Data Available</p> <hr style="border: 0.5px solid black; margin: 5px 0;"/> <p>Field Observations:</p> <p>Depth of Surface Water: _____(in.)</p> <p>Depth to Free Water in Pit: _____(in.)</p> <p>Depth to Saturated Soil: _____(in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <ul style="list-style-type: none"> Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands <p>Secondary Indicators (2 or more required):</p> <ul style="list-style-type: none"> Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No	
Wetland Hydrology Present?	Yes	No				
Hydric Soils Present?	Yes	No				
Remarks:						

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? Yes No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____
Percent of Species that are OBL, FACW or FAC (excluding FAC-).	
Remarks:	

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? Yes No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

Percent of Dominant Species that are OBL, FACW or FAC
(excluding FAC-).

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0.5px solid black;"/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
<u>Profile Description:</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? Yes No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).	
Remarks:	

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): _____

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0.5px solid black;"/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
<u>Profile Description:</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species Stratum Indicator	Associate Plant Species Stratum Indicator
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): _____

Remarks: _____

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0.5px solid black;"/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
<u>Profile Description:</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species Stratum Indicator	Associate Plant Species Stratum Indicator
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

Percent of Dominant Species that are OBL, FACW or FAC
 (excluding FAC-): _____

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0; border-top: 1px solid black; margin: 10px 0;"/> Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? Yes No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Dominant Plant Species</th> <th style="text-align: left; border-bottom: 1px solid black;">Stratum</th> <th style="text-align: left; border-bottom: 1px solid black;">Indicator</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td><td>_____</td></tr> </tbody> </table>	Dominant Plant Species	Stratum	Indicator	1. _____	_____	_____	2. _____	_____	_____	3. _____	_____	_____	4. _____	_____	_____	5. _____	_____	_____	6. _____	_____	_____	7. _____	_____	_____	8. _____	_____	_____	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Associate Plant Species</th> <th style="text-align: left; border-bottom: 1px solid black;">Stratum</th> <th style="text-align: left; border-bottom: 1px solid black;">Indicator</th> </tr> </thead> <tbody> <tr><td>9. _____</td><td>_____</td><td>_____</td></tr> <tr><td>10. _____</td><td>_____</td><td>_____</td></tr> <tr><td>11. _____</td><td>_____</td><td>_____</td></tr> <tr><td>12. _____</td><td>_____</td><td>_____</td></tr> <tr><td>13. _____</td><td>_____</td><td>_____</td></tr> <tr><td>14. _____</td><td>_____</td><td>_____</td></tr> <tr><td>15. _____</td><td>_____</td><td>_____</td></tr> <tr><td>16. _____</td><td>_____</td><td>_____</td></tr> </tbody> </table>	Associate Plant Species	Stratum	Indicator	9. _____	_____	_____	10. _____	_____	_____	11. _____	_____	_____	12. _____	_____	_____	13. _____	_____	_____	14. _____	_____	_____	15. _____	_____	_____	16. _____	_____	_____
Dominant Plant Species	Stratum	Indicator																																																					
1. _____	_____	_____																																																					
2. _____	_____	_____																																																					
3. _____	_____	_____																																																					
4. _____	_____	_____																																																					
5. _____	_____	_____																																																					
6. _____	_____	_____																																																					
7. _____	_____	_____																																																					
8. _____	_____	_____																																																					
Associate Plant Species	Stratum	Indicator																																																					
9. _____	_____	_____																																																					
10. _____	_____	_____																																																					
11. _____	_____	_____																																																					
12. _____	_____	_____																																																					
13. _____	_____	_____																																																					
14. _____	_____	_____																																																					
15. _____	_____	_____																																																					
16. _____	_____	_____																																																					
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).																																																							
Remarks:																																																							

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type?	Yes No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No	
Wetland Hydrology Present?	Yes	No				
Hydric Soils Present?	Yes	No				
Remarks:						

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 45%;">Do Normal Circumstances exist on the site?</td> <td style="width: 15%; text-align: center;">Yes</td> <td style="width: 15%; text-align: center;">No</td> <td rowspan="3" style="width: 25%; vertical-align: top; padding-left: 10px;"> Community ID: _____ Transect ID: _____ Plot ID: _____ </td> </tr> <tr> <td>Is the site significantly disturbed (Atypical Situation)?</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> </tr> <tr> <td>Is the area a potential Problem Area? (If needed, explain on reverse.)</td> <td style="text-align: center;">Yes</td> <td style="text-align: center;">No</td> </tr> </table>	Do Normal Circumstances exist on the site?	Yes	No	Community ID: _____ Transect ID: _____ Plot ID: _____	Is the site significantly disturbed (Atypical Situation)?	Yes	No	Is the area a potential Problem Area? (If needed, explain on reverse.)	Yes	No	
Do Normal Circumstances exist on the site?	Yes	No	Community ID: _____ Transect ID: _____ Plot ID: _____								
Is the site significantly disturbed (Atypical Situation)?	Yes	No									
Is the area a potential Problem Area? (If needed, explain on reverse.)	Yes	No									

VEGETATION

Dominant Plant Species Stratum Indicator	Associate Plant Species Stratum Indicator
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): _____	
Remarks: _____	

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0.5px solid black;"/> Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).	
Remarks:	

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			
Remarks:					

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species _____ Stratum _____ Indicator _____	Associate Plant Species _____ Stratum _____ Indicator _____
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____

Percent of Dominant Species that are OBL, FACW or FAC
 (excluding FAC-): _____

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Dominant Plant Species</th> <th style="text-align: left; border-bottom: 1px solid black;">Stratum</th> <th style="text-align: left; border-bottom: 1px solid black;">Indicator</th> </tr> </table>	Dominant Plant Species	Stratum	Indicator	<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Associate Plant Species</th> <th style="text-align: left; border-bottom: 1px solid black;">Stratum</th> <th style="text-align: left; border-bottom: 1px solid black;">Indicator</th> </tr> </table>	Associate Plant Species	Stratum	Indicator
Dominant Plant Species	Stratum	Indicator					
Associate Plant Species	Stratum	Indicator					
1. _____	9. _____						
2. _____	10. _____						
3. _____	11. _____						
4. _____	12. _____						
5. _____	13. _____						
6. _____	14. _____						
7. _____	15. _____						
8. _____	16. _____						
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).							
Remarks:							

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr style="border: 0.5px solid black;"/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type?	Yes No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

**DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)**

<p>Project/Site: _____ Applicant/Owner: _____ Investigator: _____</p>	<p>Date: _____ County: _____ State: _____</p>
<p>Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? Yes No (If needed, explain on reverse.)</p>	<p>Community ID: _____ Transect ID: _____ Plot ID: _____</p>

VEGETATION

<u>Dominant Plant Species</u>	<u>Stratum</u>	<u>Indicator</u>	<u>Associate Plant Species</u>	<u>Stratum</u>	<u>Indicator</u>
1. _____	_____	_____	9. _____	_____	_____
2. _____	_____	_____	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks:

HYDROLOGY

<p>Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____												
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">Do Normal Circumstances exist on the site?</td> <td style="width: 10%; border: none;">Yes</td> <td style="width: 10%; border: none;">No</td> <td style="width: 20%; border: none;">Community ID: _____</td> </tr> <tr> <td style="border: none;">Is the site significantly disturbed (Atypical Situation)?</td> <td style="border: none;">Yes</td> <td style="border: none;">No</td> <td style="border: none;">Transect ID: _____</td> </tr> <tr> <td style="border: none;">Is the area a potential Problem Area? (If needed, explain on reverse.)</td> <td style="border: none;">Yes</td> <td style="border: none;">No</td> <td style="border: none;">Plot ID: _____</td> </tr> </table>	Do Normal Circumstances exist on the site?	Yes	No	Community ID: _____	Is the site significantly disturbed (Atypical Situation)?	Yes	No	Transect ID: _____	Is the area a potential Problem Area? (If needed, explain on reverse.)	Yes	No	Plot ID: _____	
Do Normal Circumstances exist on the site?	Yes	No	Community ID: _____										
Is the site significantly disturbed (Atypical Situation)?	Yes	No	Transect ID: _____										
Is the area a potential Problem Area? (If needed, explain on reverse.)	Yes	No	Plot ID: _____										

VEGETATION

<table style="width: 100%; border: none;"> <tr> <th style="width: 60%;">Dominant Plant Species</th> <th style="width: 15%;">Stratum</th> <th style="width: 25%;">Indicator</th> </tr> </table>	Dominant Plant Species	Stratum	Indicator	<table style="width: 100%; border: none;"> <tr> <th style="width: 60%;">Associate Plant Species</th> <th style="width: 15%;">Stratum</th> <th style="width: 25%;">Indicator</th> </tr> </table>	Associate Plant Species	Stratum	Indicator
Dominant Plant Species	Stratum	Indicator					
Associate Plant Species	Stratum	Indicator					
1. _____	9. _____						
2. _____	10. _____						
3. _____	11. _____						
4. _____	12. _____						
5. _____	13. _____						
6. _____	14. _____						
7. _____	15. _____						
8. _____	16. _____						
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).							
Remarks:							

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: _____ Applicant/Owner: _____ Investigator: _____	Date: _____ County: _____ State: _____
Do Normal Circumstances exist on the site? Yes No Is the site significantly disturbed (Atypical Situation)? Yes No Is the area a potential Problem Area? (If needed, explain on reverse.) Yes No	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

<u>Dominant Plant Species</u> <u>Stratum</u> <u>Indicator</u>	<u>Associate Plant Species</u> <u>Stratum</u> <u>Indicator</u>
1. _____	9. _____
2. _____	10. _____
3. _____	11. _____
4. _____	12. _____
5. _____	13. _____
6. _____	14. _____
7. _____	15. _____
8. _____	16. _____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).	
Remarks:	

HYDROLOGY

Recorded Data (Describe in Remarks): Stream, Lake, or Tide Gauge Aerial Photographs Other No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: _____(in.) Depth to Free Water in Pit: _____(in.) Depth to Saturated Soil: _____(in.)	Wetland Hydrology Indicators: Primary Indicators: Inundated Saturated in Upper 12 Inches Water Marks Drift Lines Sediment Deposits Drainage Patterns in Wetlands Secondary Indicators (2 or more required): Oxidized Root Channels in Upper 12 Inches Water-Stained Leaves Local Soil Survey Data FAC-Neutral Test Other (Explain in Remarks)
Remarks:	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type?	Yes No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Hydric Soil Indicators:					
Histosol Histic Epipedon Sulfidic Odor Aquic Moisture Regime Reducing Conditions Gleyed or Low-Chroma Colors			Concretions High Organic Content in Surface Layer in Sandy Soils Organic Streaking in Sandy Soils Listed on Local Hydric Soils List Listed on National Hydric Soils List Other (Explain in Remarks)		
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
Remarks:			

**DELINEATION OF WATERS OF THE UNITED STATES
SUPPLEMENTAL REPORT**

Delineation of Waters of the United States

Supplemental Report

Regulatory #200500572

Greenbriar ±577-Acre Site and Associated Utility Alignments
Sacramento County, California

Prepared for: U.S. Army Corps of Engineers

Contracted By: AKT Development Corporation

February 27, 2006

Submitted by:
 **FOOTHILL ASSOCIATES**

© 2006

Table of Contents

1.0 Introduction	1
2.0 Methodology	2
2.1 Site-Specific References	2
2.2 Field Methodology	2
2.3 GPS Data Integration	3
3.0 Results	4
3.1 Study Area Description, Land Use	4
3.1.1 Study Area Location	4
3.1.2 Existing and Historic Land Use	4
3.1.3 Atypical Situation and Normal Circumstances	4
3.2 Vegetation	5
3.2.1 Agricultural Cropland	5
3.2.2 Seasonal Wetland	5
3.2.3 Farmed Wetland	5
3.2.4 Seasonal Marsh	6
3.3 Classification of Waters of the United States at the Greenbriar Site	6
3.3.1 Depressional Seasonal Wetland	6
3.3.2 Farmed Wetland	6
3.3.3 Depressional Seasonal Marsh	7
3.3.4 Ditch/Canal	8
3.3.5 Excavated pond	10
4.0 References	11

List of Tables

Table 1 — Waters of the U.S: Acreage According to Feature	10
---	----

List of Figures

Figure 1 — Site and Vicinity	13
Figure 2 — Delineation Map	14

List of Appendices

Appendix A — Ground-Level Photographs	
Appendix B — Routine Wetland Determination Data Forms	

1.0 INTRODUCTION

In response to the December 6, 2005 letter from the U.S. Army Corps of Engineers (Corps), this report provides supplemental information to the site's initial wetland delineation report, dated November 3, 2005, prepared by Foothill Associates. This report specifically addresses atypical situations versus normal circumstances on the site and includes three-parameter data gathered for the 36 Corps-requested data points along with updated three-parameter data for sample points 4A-10, which were initially evaluated as part of the site's original wetland delineation report. Additional data points were evaluated as warranted based on site conditions at the time of the field surveys, for example, to determine the wetland or upland status of uncertain areas. Based on the re-evaluation of the site, a revised wetland delineation map has been prepared and included in this report.

2.0 METHODOLOGY

2.1 Site-Specific References

Available information pertaining to the natural resources of the region was reviewed. All references reviewed for this delineation are listed in Section 4.0 of this report. Pertinent site-specific reports and general references utilized concurrent with the delineation include the following:

- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS;
- GretagMacbeth. 2000. *Munsell Soil Color Charts*. New Windsor, NY;
- Hickman, James C. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, CA;
- Reed, P.B., Jr. 1988. *National List of Plant Species That Occur in Wetlands: California (Region O)*; U.S. Fish & Wildlife Service;
- USDA, NRCS (Natural Resource Conservation Service). 1993. *Soil Survey of Sacramento County, California*. USDA, NRCS, in cooperation with the Regents of the University of California (Agricultural Experiment Station); and
- USDA, NRCS. 2003. *Field Indicators of Hydric Soils in the United States*, Version 5.01. G.W. Hurt, P.M. Whited, and R.F. Pringle (Eds). USDA, NRCS in cooperation with the National Committee for Hydric Soils. Fort Worth, TX.

2.2 Field Methodology

The Corps 1987 three-parameter (vegetation, hydrology, and soils) methodology to delineate jurisdictional waters of the U.S was utilized during the field surveys. This methodology requires the collection of data on soils, vegetation, and hydrology at several locations to establish the jurisdictional boundary of wetlands. In addition, the site was re-evaluated according to atypical situation methodology according to the Corps' request.

Field surveys of the site were conducted by Foothill Associates on January 20 and 24, 2006; and February 13, 14, and 22, 2006. Each data point was evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species (as determined by the U.S. Fish and Wildlife Service National List of Plant Species that Occur in Wetlands: 1988 California (Region 0)) was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. The plant community within a five-foot radius surrounding each data point was evaluated to determine dominant vegetation. Given the herbaceous vegetation stratum

within the fields and the fact that the surveys were conducted near the beginning of the growing season, not all of the vegetation on the site was readily identifiable. All dominant species within each data point were keyed out to the extent possible. The state of the vegetation growth did not bias the results of the delineation in terms of which areas were identified as wetlands. The results were consistent under both normal and atypical methodologies. Any inaccuracies did not affect the results of this wetland delineation.

A soil pit was dug to a depth of 16-20 inches and the soil profile was examined for wetness characteristics. Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. In addition to sampling at the locations requested by the Corps, routine determination data points were collected in other areas of the site. The location of each data point is depicted in **Figure 2** and corresponding routine wetland determination data forms are provided in **Appendix B**.

As part of the fieldwork, all previously mapped ditches were re-inspected to determine the surface hydrological connection, if any, between the ditches on the site and their jurisdictional status was re-evaluated accordingly. Representative ground-level photographs on the site are included in **Appendix A**.

2.3 GPS Data Integration

All data point locations and boundaries of wetlands and other waters of the U.S. within the site were surveyed and mapped with a Trimble GeoXT GPS (Global Positioning System) hand-held unit. This is a mapping-grade GPS unit capable of real-time differential correction and sub-meter accuracy. The GPS data were downloaded from the unit and differentially corrected utilizing Trimble Pathfinder Office software and appropriate base station data, and then converted to ESRI ® shape file format. Data were exported to the Geographic Information System (GIS) software in the State Plane coordinate system (NAD 83) with units as "survey feet." Within the GIS, data were edited and linear features were built into polygons using recorded width information. All wetland shape files were merged to create a single wetland file with calculated acreages. These results are presented in **Figure 2**.

3.0 RESULTS

3.1 Study Area Description, Land Use

3.1.1 Study Area Location

The ±577-acre site and associated utility alignments are located in northwestern Sacramento County, approximately two miles southeast of the Sacramento International Airport and two miles northeast of Sacramento River. The site is bound by Interstate 5 on the south, State Highways 70/99 on the east, and Elkhorn Boulevard on the north. The utility alignments include areas along the south edge of Elkhorn Boulevard, east to Natomas Boulevard and the east edge of the site, south along State Route 99. The site is bound on the west by rural residences and agricultural lands. The site is located within Townships 9 and 10 North, Range 4 East and occupies portions of sections 4 and 33 of the U.S.G.S. Taylor Monument 7.5' quadrangle map (**Figure 1**).

3.1.2 Existing and Historic Land Use

With the exception of a small area in the northern portion of the site, the entire site is currently cultivated with dry farmed wheat. A portion of the site was in rice cultivation until 2002. A horse race track and an irrigated polo field were present in the northern portion of the site from approximately 1980 to the early 2000s. For several years the horse ranch subleased the northwest corner of the property to a highway construction company, who stored equipment there. For at least the last 20 years, the remainder of the property outside the horse ranch area has been in agricultural use (rice, sugar beets, wheat).

3.1.3 Atypical Situation and Normal Circumstances

The site was evaluated as having normal circumstances because the vegetation conditions that were observed reasonably represent normal circumstances for the hydric soils and wetlands hydrology on the site. This is because the fields were seeded with wheat, an upland species, prior to the onset of the rainy season. Because wheat will not grow in wetlands as it cannot withstand wetland hydrology, the areas in which wheat has germinated and grown reflect non-wetland conditions. Since our observations were made during the normal wet period of the growing season, we were able to observe the vegetation before the planted community began to monopolize the site as we would expect to happen later during the year. We did observe a sorting of vegetation with wheat being either absent or not dominant from the areas that otherwise clearly had wetlands characteristics.

As requested by the Corps, we also evaluated the site as an atypical site. For the atypical evaluation, we were unable to determine what vegetation would have been present absent the agriculture use of the land (since that first took place over 60 years ago and appears to be relatively continuous since then), so we did a two-parameter delineation for the

atypical evaluation. For each data point, the atypical evaluation results in the same wetland determination as the normal circumstances assessment revealed.

3.2 Vegetation

The vegetation assemblages and habitat types occurring on the site include agricultural cropland, depressional seasonal wetland, farmed wetland, and depressional seasonal marsh

3.2.1 Agricultural Cropland

As previously mentioned, nearly the entire site is currently cultivated with dry farmed, or non-irrigated, wheat. While wheat vastly dominates all other herbaceous vegetation on the site, other immature grasses were emerging within some of the data points. Since most of the non-wheat vegetation was observed prior to their flowering period and not readily identifiable, these species were keyed out to the extent possible. Aside from the wheat, the dominant herbaceous species observed within the data points are most likely annual bluegrass (*Poa annua*), Mediterranean barley (*Hordeum marinum*), ryegrass (*Lolium multiflorum*), and bur clover (*Medicago polymorpha*).

3.2.2 Seasonal Wetland

The depressional seasonal wetlands on the site support hydrophytic vegetation. Depressional seasonal wetlands are depressions within the topography that inundate or saturate for short periods of time following intense rains but do not maintain seasonal aquatic or saturated soils conditions for durations long enough for colonization by perennial, obligate plant species. As such, plant species in seasonal wetlands are generally of two types: species that can tolerate short periods of inundation but have not adapted to withstand sustained aquatic or saturated soils conditions, and short-lived (primarily annual) species that take advantage of ephemeral aquatic and/or saturated soils conditions. Plant species observed occurring within the seasonal wetlands on the site and in the associated utility alignments include Italian ryegrass, Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), vernal pool buttercup (*Ranunculus bonariensis* var. *trisepalus*) and nutsedge (*Cyperus esculentus*). The depressional seasonal wetlands are concentrated in the northern and central portions of the site.

3.2.3 Farmed Wetland

Farmed wetlands on the site are basically seasonal wetlands that occur within agricultural croplands. Since wheat, an upland species, is currently in cultivation on the Greenbriar site, the cropland areas that are functioning as wetland habitat support a predominance of the non-wheat, herbaceous species discussed above for the agricultural cropland community.

3.2.4 Seasonal Marsh

Cattail alliance occurs throughout the state of California in brackish, alkali or freshwater marshes from sea level to approximately 6,500 in elevation. Typically, cattail alliance occurs in intermittently or permanently flooded wetlands, such as perennial marshes. The diagnostic species of this vegetation alliance is cattail (*Typha latifolia*), which is a hydrophytic species. Associates vary widely depending on length of inundation/saturation during the year as well as seasonal temperatures and water chemistry. On the site, sand bar willow (*Salix exigua*) and smartweed (*Polygonum* sp.) are common associates of this alliance. This vegetation alliance also occurs within the depressional seasonal marsh located along the eastern site boundary.

3.3 Classification of Waters of the United States at the Greenbriar Site

Jurisdictional waters of the U.S. are classified into multiple types based on topography, edaphics (soils), vegetation and hydrologic regime. Primarily, the Corps establishes two distinctions: wetland and non-wetland waters of the U.S. Non-wetland waters are commonly referred to as other waters. Potential jurisdictional wetland types mapped within the site include depressional seasonal wetland, farmed wetland, and depressional seasonal marsh. Potential other waters of the U.S. delineated within the site include a portion of the networks of ditches and canals on-site. In addition, the ponds on the site were identified as excavated in uplands and interpreted as non-jurisdictional features. A description of all of the features delineated within the site is provided in the following sections.

3.3.1 Depressional Seasonal Wetland

A total of **0.18** acre of depressional seasonal wetland has been delineated on the site. Depressional seasonal wetlands are defined by a hydrologic regime characterized by saturation rather than inundation. Depressional seasonal wetlands were identified on the site as topographic depressions with a hydrologic regime characterized by saturation and capable of supporting hydrophytic plant species and hydric soils. Plant species in depressional seasonal wetlands are adapted to withstand short periods of saturation or saturated soils conditions but will not withstand prolonged periods of inundation, as is common in vernal pools. Depressional seasonal wetlands are located in the northern-central portion of the site and numbered 21-31 on **Figure 2**.

The depressional seasonal wetlands on the site support wetland soils, vegetation, and hydrology; however, they are isolated features and are exempt from Corps jurisdiction as they do not connect to waters of the United States.

3.3.2 Farmed Wetland

A total of **9.75** acres of farmed wetlands have been delineated on the site. Similar to depressional seasonal wetlands, farmed wetlands are defined by a hydrologic regime characterized by saturation rather than inundation and support wetland soils, vegetation,

and hydrology. Farmed wetlands are located in the northern and western portions of the site and numbered 8-10 and 66-68 on **Figure 2**.

Wetlands 8-10 are adjacent to but hydrologically separated from Lone Tree Canal by a berm. These features have been identified in this delineation report as jurisdictional consistent with existing Corps policy and the decision of the Sixth Circuit of the United States Courts of Appeals in *Carabell v. United States*, 391 F.3d 704 (2004). The *Carabell* decision is now under review by the United States Supreme Court. The Supreme Court may reach a different conclusion regarding Corps jurisdiction over adjacent wetlands which may change the results of this delineation.

Wetland number 8 includes both wetland and upland characteristics. While the perimeter of the feature is relatively well defined, the interior portions contain small, irregularly shaped wetland and upland areas and are very difficult to map consistently. In order to determine the amount of wetland acreage encompassed within the feature, four east-west transects (perpendicular to existing cultivation furrows) were walked across the entire width of the feature. At every 25-foot interval along each transect, the determination of either upland or wetland characteristics (e.g., presence/absence of algal matting, wheat-dominated vegetation) were noted. Individual soil pits were not dug for any of the points within these transects. The percentage of all points that showed wetland characteristics was used to calculate the amount of wetland acreage within the mapped feature. Of the 33 points taken along the four transects, 14 showed wetland characteristics. Therefore, only 42 percent of Wetland 8 is a wetland.

Wetlands 66-68 are isolated and are exempt from Corps jurisdiction as they do not connect to waters of the United States.

3.3.3 Depressional Seasonal Marsh

A total of **1.65** acres of depressional seasonal marsh have been delineated on the site. Depressional seasonal marshes are wetlands that are seasonally inundated or saturated, but inundation/saturation persists through the majority of the warm season. The persistence of inundation/saturation into the warm season permits the growth of primarily perennial herbaceous plant species capable of withstanding extended periods of inundation or saturated soil conditions. In the Great Central Valley, these features are typically located on the fringes of naturally occurring or artificially created impoundments, such as ponds or reservoirs. These features may also be associated with slow-moving riverine systems where natural and/or artificial flows persist into the warm season. The depressional seasonal marshes occur in the northern and eastern portions of the site and are numbered 1 and 11-20 on **Figure 2**.

Marsh 1 was identified as a perennial wetland on the original wetland delineation map. This feature received year-round water from the equestrian facility when it was in operation. Given the lack of ponded water within this feature during our February 2006 field surveys and the fact that the equestrian facility is no longer in operation, this feature functions as a seasonal marsh and has been labeled on **Figure 2** accordingly.

3.3.4 Ditch/Canal

A total of 12.37 acres of ditch/canal have been delineated on the site. Non-tributary water conveyance features excavated in uplands and constructed for the transport and distribution of groundwater between agricultural fields are not jurisdictional features unless the Corps determines and claims jurisdiction on a case-by-case basis. Water conveyance features excavated in uplands and constructed for transport and distribution of surface water between agricultural fields may be jurisdictional features, specifically if they are tributary to known waters of the U.S. Under the Corps policies implementing Section 404 of the Clean Water Act, non-tidal agricultural ditches constructed in uplands for the purpose of draining and irrigating agricultural farmland are normally non-jurisdictional. Based on this long-standing policy, the majority of agricultural ditches on the Greenbriar site are non-jurisdictional.

As stated in the earlier wetland delineation submitted, the site is approximately two miles northeast of the Sacramento River in the vicinity of the former Bush Lake. Large-scale flood control projects in the 1930s and demand for agricultural production in the region resulted in construction of a complex system of canals and ditches constructed to maximize water conveyance and storage. This system drained the area well prior to enactment of the Clean Water Act. On-site, the natural hydrologic regime was altered to facilitate agricultural production prior to 1937.

Lone Tree Canal is physically connected to the Western Drainage canal via a series of culverts, and the Western Drainage Canal is tributary to the Sacramento River. The Final Natomas Habitat Conservation Plan (2003) identified and described the ditches and canals along the western, southern, and eastern site boundary as part of the water drainage system, and the ditches within the interior site boundary are identified as part of the water delivery system. This system of irrigation and drainage ditches fed and drained the site for agricultural purposes. Water pumped through the irrigation ditches from a lift station located approximately half a mile north of the site artificially irrigated the site until 2003 when water to the site was shut off.

The original flood control structures in the Natomas region were constructed in the 1910s. These structures significantly changed the area's hydrologic regime. Subsequently, the system of irrigation canals and drainage ditches were constructed by the end of the 1930s to supply water for agricultural production and to drain excess water from fields. All of this occurred well prior to the enactment of the Clean Water Act in 1972. According to Corps policy and relevant case law, these conditions constitute the baseline environmental conditions and must be taken into account when determining jurisdiction over sites in this region. By 1972, virtually all of the Greenbriar site existed as uplands.

The irrigation ditches and the drainage ditches constructed on the site were constructed for the purpose of agricultural production. Since at least the 1930s, much of the Greenbriar site has been devoted to rice production. Crops continue to be grown on-site to this day. Rice was farmed on the site until as recently as 2004. Wheat, an upland crop, was planted for the 2005 growing season and again for the 2006 growing season.

As artificial irrigation of the site is no longer needed to grow rice, water delivery to the site from the pump station to the north has ceased. The on-site irrigation ditches are now dry. The site's natural hydrology supports the growth of wheat on the site. The underlying purpose and the current condition of the on-site irrigation ditches indicate that Ditches 32, 34-35, 37-40, and 42-56 are not subject to Corps jurisdiction.

There are isolated irrigation ditches on the site. These ditches were man-made and constitute remnants of artificial conveyance facilities associated with agricultural practices on site. They are not functionally connected by natural flow to Lone Tree Canal, the West Drainage Canal or the Sacramento River. At no time has standing or flowing water been observed in these interior, remnant ditches that are classified as part of a water delivery system. The isolated irrigation ditches ought to be exempt from Corps jurisdiction as they do not connect to waters of the United States. These non-jurisdictional irrigation ditches include Ditches 33, 36, and 41. Similarly, other on-site or roadside ditches with no connection to waters of the United States, including Ditches 57-63 are non-jurisdictional.

Other drainage ditches on the site that connect with Lone Tree Canal merely collect excess surface water from the site. Lone Tree Canal and other on-site drainages that eventually connect to the Sacramento River by way of Lone Tree Canal would be jurisdictional if they became tidal or extended the ordinary high water mark (OHWM). We understand that the exemption does not apply to a drainage ditch that extends the OHWM of a tributary otherwise subject to regulation.

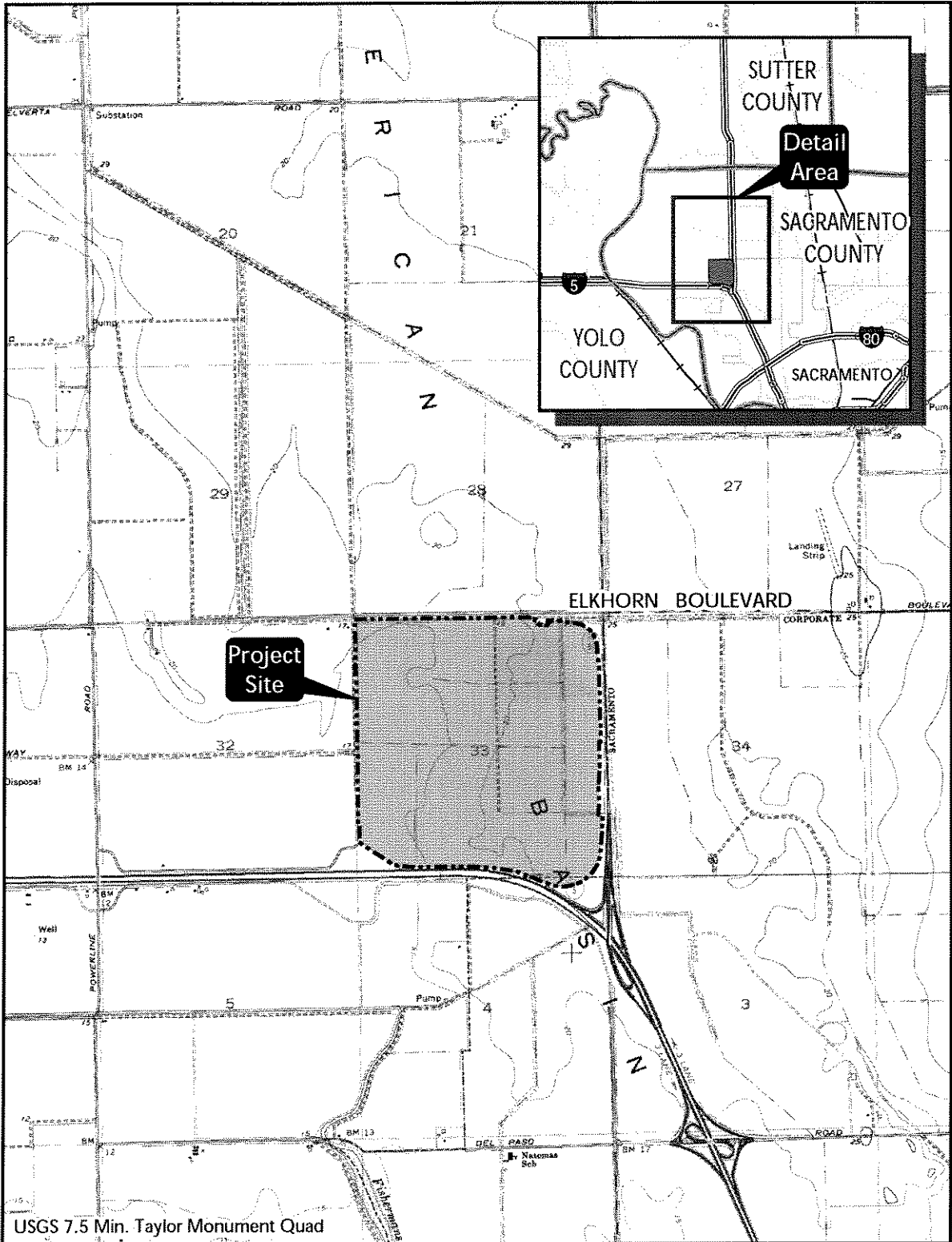
Lone Tree Canal (Ditches 3, 4, and 6) is likely a jurisdictional waters of the United States. This OHWM extends from Lone Tree Canal to other on-site drainage ditches with which it connects on site. These drainage ditches and any connecting irrigation ditches are jurisdictional to the extent of the OHWM or to the extent of adjacent wetlands. Ditches 5 and 7 connect with Lone Tree Canal and extend its OHWM. Ditch 7 extends the OHWM approximately 23 feet east from the culvert under I-5. Ditch 5 extends the OHWM approximately 11 feet east from its connection with Lone Tree Canal. Ditch 2 also extends the OHWM of Lone Tree Canal; however, because of its connection with Seasonal Marsh 1, it extends the Corps jurisdiction from Lone Tree Canal to the boundaries of the seasonal marsh.

Wetlands adjacent to jurisdictional waters of the United States extend the Corps' jurisdiction. However, the Corps lacks jurisdiction over on-site wetlands that are adjacent to exempt ditches. The jurisdictional ditches on the Greenbriar site include Lone Tree Canal (consisting of Feature 3, 4, and 6) and connecting drainage ditches 2, 5, and 7. Only wetlands adjacent to these features may be subject to Corps jurisdiction. Therefore, on-site wetlands that may be jurisdictional include Seasonal Marsh 1 and Farmed Wetlands 8-10. The remainder are non-jurisdictional based on their isolation from jurisdictional waters of the United States.

4.0 REFERENCES

- City of Sacramento. 2003. *Errata to the Final Natomas Basin Habitat Conservation Plan*. Sacramento, CA;
- Environmental Laboratories. 1987. *Corps of Engineers Wetlands Delineation Manual*. U.S. Army Corps of Engineers Waterways Experiment Station. Vicksburg, MS;
- Federal Emergency Management Agency (FEMA). 1996. National Flood Insurance Program Q3 Flood Data, Disc 1: California;
- GretagMacbeth. 2000. *Munsell Soil Color Charts*. New Windsor, NY;
- Hickman, James C. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley, CA;
- Hitchcock, A.S. 1935. Revised 1971. *Manual of the Grasses of the United States*. U.S. Department of Agriculture, Dover Publications, NY;
- Hitchcock, Leo C. and Arthur Cronquist. 1996. *Flora of the Pacific Northwest*. University of Washington Press, Seattle, WA;
- Mason, Herbert L. 1957. *A Flora of the Marshes of California*. University of California Press, Berkeley, California;
- Munz, Phillip A. 1968. *A California Flora and Supplement*. University of California Press, Berkeley, CA;
- Reed, P.B., Jr. 1988. *National List of Plant Species That Occur in Wetlands: California (Region O)*; U.S. Fish & Wildlife Service;
- Sawyer, John O. and Todd Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society (CNPS), Sacramento, CA;
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS). 1937. *Historic Aerial Photo Coverage of Sacramento County, California*;
- USDA, NRCS. 1957. *Historic Aerial Photo Coverage of Sacramento County, California*;
- USDA, NRCS. March 1992. *Hydric Soils List for Sacramento County, California*;
- USDA, NRCS. 1993. *Soil Survey of Sacramento County, California*. USDA, NRCS, in cooperation with the Regents of the University of California (Agricultural Experiment Station); and

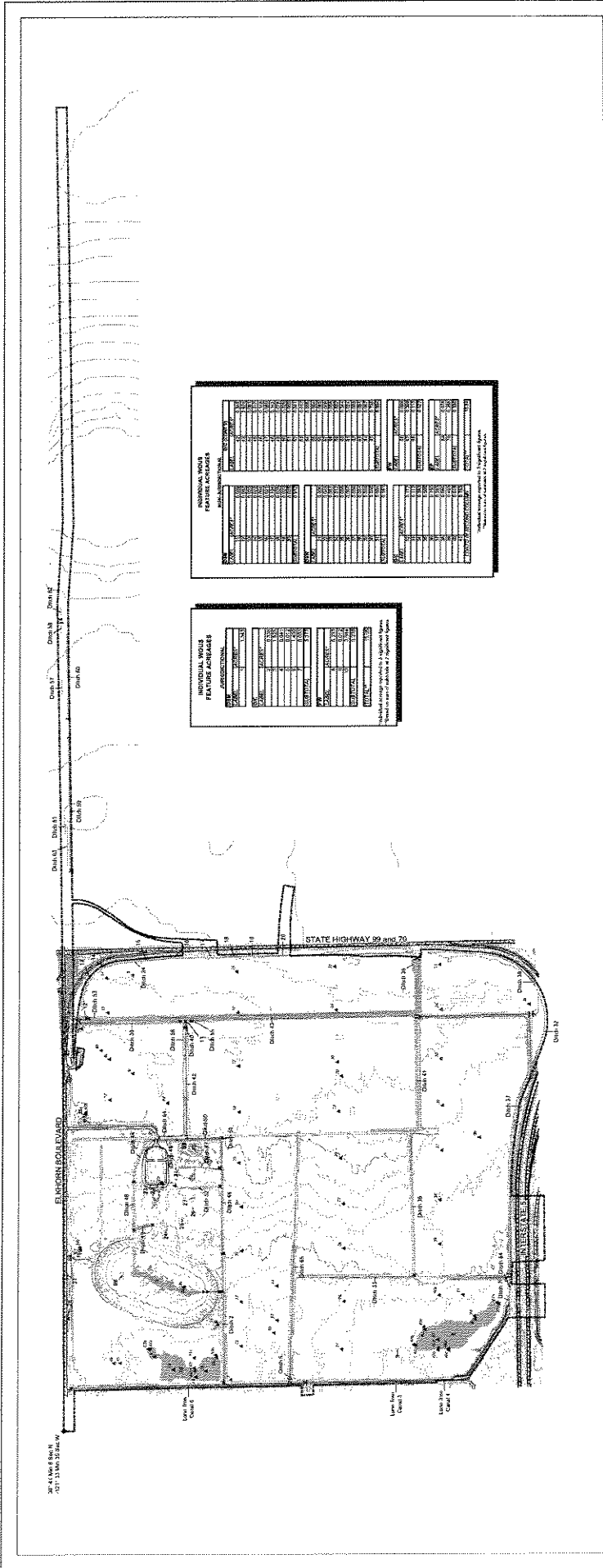
- USDA, NRCS. 2003. *Field Indicators of Hydric Soils in the United States*, Version 5.01. G.W. Hurt, P.M. White, and R.F. Pringle (eds). USDA, NRCS in cooperation with the National Committee for Hydric Soils. Fort Worth, TX;
- U.S. Geological Survey. 1954. *Davis, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1905. *Davisville, California*. 15 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1967. *Taylor Monument, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior;
- U.S. Geological Survey. 1967. Photorevised 1975. *Taylor Monument, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior; and
- U.S. Geological Survey. 1967. Photorevised 1980. *Taylor Monument, California*. 7.5 -minute series topographic quadrangle. U.S. Department of the Interior.



USGS 7.5 Min. Taylor Monument Quad

SITE AND VICINITY

<p>FOOTHILL ASSOCIATES ENVIRONMENTAL CONSULTING + PLANNING LANDSCAPE ARCHITECTURE</p>	<p>0 1500 3000 SCALE IN FEET</p>	<p>Drawn By: AH Date: 12/01/04</p>	<p>FIGURE 1</p>
--	--------------------------------------	--	------------------------



GREENBRIAR
WETLAND DELINEATION
FOOTHILL ASSOCIATES
 10000 W. 12th Avenue, Suite 100
 Golden, Colorado 80401
 Phone: 303.440.1234
 Fax: 303.440.1235
 Email: info@foothill.com

FIGURE 2

WETLAND WITH FUTURE ACRES		WETLAND WITH FUTURE ACRES	
W1	1.00	W1	1.00
W2	1.00	W2	1.00
W3	1.00	W3	1.00
W4	1.00	W4	1.00
W5	1.00	W5	1.00
W6	1.00	W6	1.00
W7	1.00	W7	1.00
W8	1.00	W8	1.00
W9	1.00	W9	1.00
W10	1.00	W10	1.00
W11	1.00	W11	1.00
W12	1.00	W12	1.00
W13	1.00	W13	1.00
W14	1.00	W14	1.00
W15	1.00	W15	1.00
W16	1.00	W16	1.00
W17	1.00	W17	1.00
W18	1.00	W18	1.00
W19	1.00	W19	1.00
W20	1.00	W20	1.00
W21	1.00	W21	1.00
W22	1.00	W22	1.00
W23	1.00	W23	1.00
W24	1.00	W24	1.00
W25	1.00	W25	1.00
W26	1.00	W26	1.00
W27	1.00	W27	1.00
W28	1.00	W28	1.00
W29	1.00	W29	1.00
W30	1.00	W30	1.00
W31	1.00	W31	1.00
W32	1.00	W32	1.00
W33	1.00	W33	1.00
W34	1.00	W34	1.00
W35	1.00	W35	1.00
W36	1.00	W36	1.00
W37	1.00	W37	1.00
W38	1.00	W38	1.00
W39	1.00	W39	1.00
W40	1.00	W40	1.00
W41	1.00	W41	1.00
W42	1.00	W42	1.00
W43	1.00	W43	1.00
W44	1.00	W44	1.00
W45	1.00	W45	1.00
W46	1.00	W46	1.00
W47	1.00	W47	1.00
W48	1.00	W48	1.00
W49	1.00	W49	1.00
W50	1.00	W50	1.00
W51	1.00	W51	1.00
W52	1.00	W52	1.00
W53	1.00	W53	1.00
W54	1.00	W54	1.00
W55	1.00	W55	1.00
W56	1.00	W56	1.00
W57	1.00	W57	1.00
W58	1.00	W58	1.00
W59	1.00	W59	1.00
W60	1.00	W60	1.00
W61	1.00	W61	1.00
W62	1.00	W62	1.00
W63	1.00	W63	1.00
W64	1.00	W64	1.00
W65	1.00	W65	1.00
W66	1.00	W66	1.00
W67	1.00	W67	1.00
W68	1.00	W68	1.00
W69	1.00	W69	1.00
W70	1.00	W70	1.00
W71	1.00	W71	1.00
W72	1.00	W72	1.00
W73	1.00	W73	1.00
W74	1.00	W74	1.00
W75	1.00	W75	1.00
W76	1.00	W76	1.00
W77	1.00	W77	1.00
W78	1.00	W78	1.00
W79	1.00	W79	1.00
W80	1.00	W80	1.00
W81	1.00	W81	1.00
W82	1.00	W82	1.00
W83	1.00	W83	1.00
W84	1.00	W84	1.00
W85	1.00	W85	1.00
W86	1.00	W86	1.00
W87	1.00	W87	1.00
W88	1.00	W88	1.00
W89	1.00	W89	1.00
W90	1.00	W90	1.00
W91	1.00	W91	1.00
W92	1.00	W92	1.00
W93	1.00	W93	1.00
W94	1.00	W94	1.00
W95	1.00	W95	1.00
W96	1.00	W96	1.00
W97	1.00	W97	1.00
W98	1.00	W98	1.00
W99	1.00	W99	1.00
W100	1.00	W100	1.00

PREPARED BY: GREENBRIAR

DATE: 08/15/2005

SCALE: 1"=400'

FIGURE 2

FOOTHILL ASSOCIATES

10000 W. 12th Avenue, Suite 100

Golden, Colorado 80401

Phone: 303.440.1234

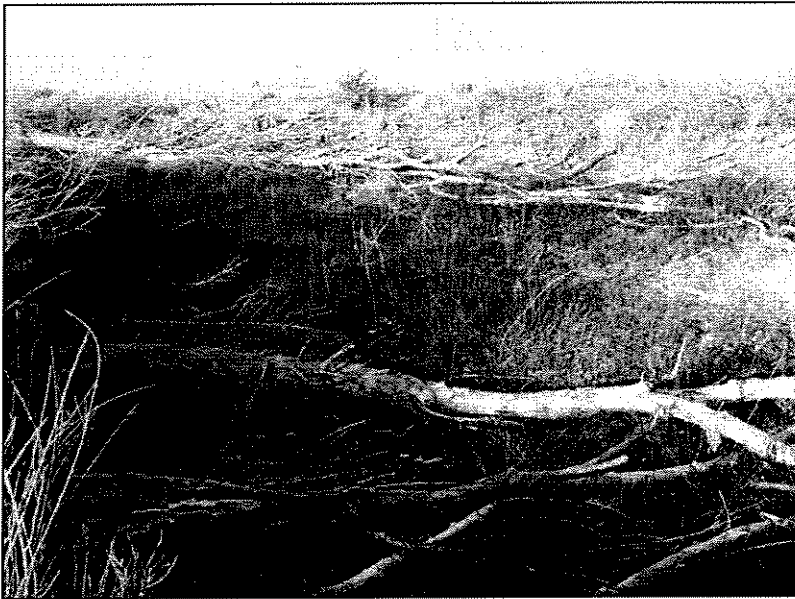
Fax: 303.440.1235

Email: info@foothill.com

Appendix A — Ground-Level Photographs



Greenbriar
Seasonal Marsh #1 — Northern Portion
Photo Date: February 22, 2006



Greenbriar
Seasonal Marsh #1 — Central Portion
Photo Date: February 22, 2006

GROUND-LEVEL PHOTOGRAPHS



Greenbriar
Seasonal Marsh #1 — Southern Portion
Photo Date: February 22, 2006



Greenbriar
Seasonal Marsh #1 — Southern End
Photo Date: February 22, 2006

GROUND-LEVEL PHOTOGRAPHS