Appendix E: Biological Resources

E-1: Line 406/407 Jurisdictional Delineation Reports

Draft Report

PG&E Line 406 Pipeline Project Wetland Delineation Report

Prepared for

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May 2008

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Abbreviations and Acronyms

CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
GIS	geographic information system
GPS	global positioning system
HUC	Hydrologic Unit Code
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
PG&E	Pacific Gas and Electric Company
RWQCB	Regional Water Quality Control Board
U.S.	United States
USGS	United States Geological Survey
USACE	U.S. Army Corps of Engineers

Executive Summary

To meet the projected increase in customer demand in the Central Valley over the next 10 to 15 years, Pacific Gas and Electric Company (PG&E) is constructing a natural gas transmission in Yolo County, California. The proposed project discussed in this report includes the construction of approximately 14 miles of 30-inch-diameter natural gas transmission pipeline. The completed pipeline would operate at a maximum pressure of 975 pounds per square inch and transport up to 475,000,000 cubic feet of natural gas per day.

Prior to the waters of the United States (U.S.) and wetlands delineation survey, a reconnaissance-level field survey was conducted to determine the potential environmental consequences for four potential alternatives for the proposed project. The final route selection was based on the results of the constraints identified in the *L400/401 to L172A Feasibility and Routing Study* (CH2M HILL, 2006). The selected route is a slightly modified version of alternative route 3.

This report presents the findings of a delineation of waters of the U.S. and wetlands conducted by CH2M HILL biologists Tim Armstrong and Russell Huddleston on April 4 and 5, 2007. Additional data were collected on March 28, 2008 following a site visit with the U.S. Army Corps of Engineers (USACE). The delineation was conducted in accordance with the USACE's *Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2006).

Twenty-two sample locations were established in topographic depressions, swales, and other low areas in the approximately 1,697-acre study area. The delineation identified a total of 1.41 acres of seasonal wetland, seasonal wetland swales, and other waters in the study area that could potentially fall under the USACE's jurisdiction under the Federal Clean Water Act (CWA). Several other features, including a constructed pond, irrigation canals, agricultural drainage ditches, and upland swales, also were identified in the study area, but are not likely to fall under the USACE's jurisdiction. The USACE is ultimately responsible for determining the limits of its jurisdiction for the purposes of assessing impacts on waters of the U.S. (including wetlands). The information provided in this report is intended to assist the USACE with that determination.

SECTION 1

Introduction

1.1 Project Description

To meet the projected increase in demand for natural gas in the Central Valley over the next 10 to 15 years, PG&E has developed a long-range investment plan to upgrade and increase the local natural gas transmission system in the area. Included in that plan is the proposed Line 406 project, which consists of approximately 14 miles of 30-inch-diameter natural gas transmission pipeline that would operate at a maximum of 975 pounds per square inch and would transport up to 475,000,000 cubic feet of natural gas per day. In addition to the main pipeline, PG&E plans to construct support structures including main line and bridle valves and blow-off stacks, as well as a pressure limiting and metering station at Line 172A. Above ground line-markers and electrolysis test stations will be installed at selected locations along the alignment. The proposed in-service date is October 1, 2009, with the start of construction projected to be May 1, 2009.

1.2 Project Location

This report covers the proposed Line 406 pipeline that originates at the existing Line 400/401 approximately 1.7 miles north of the town of Capay, and traverses approximately 14 miles to the east to just beyond the existing Line 172A, near the town of Yolo, east of Interstate 5 (Figure 1). The project is located in Yolo County, approximately 4 miles northwest of Woodland. The project starts in Township 10 north, Range 02 east, Section 11 in the Esparto United States Geologic Survey (USGS) 7.5-minute quadrangle, traverses the northern part of the Madison quadrangle, and terminates in Township 10 north, Range 01 east, section 1 of the Woodland quadrangle (Mount Diablo Meridian). The start of the project is located at 38° 43′ 52″ north latitude, 122° 03′ 22″ west longitude and terminates at 38° 44′ 35″ north latitude, 121° 48′ 09″ west longitude.

For the purpose of this report, the proposed alignment has been divided into four segments based on land use, vegetation communities, and bisecting roads. Descriptions and locations of the community types found within the project analysis area are provided in the following sections.

- Segment 1—L400/401 to County Road 85, approximately 0.6 mile of orchards;
- Segment 2—County Road 85 to Interstate 505, approximately 5.0 miles of irrigated crops;
- Segment 3—Interstate 505 to County Road 95A, approximately 5.5 miles of annual grassland in the Dunnigan Hills; and
- Segment 4—County Road 95A to L172A, approximately 3.0 miles of irrigated crops.

1.3 Environmental Setting

The project area is located in the west-central portion of the Sacramento Valley. The eastern and western ends of the project are located in the Yolo Alluvial Fans ecological subsection at elevations ranging from 75 to 200 feet. This subsection is characterized by a broad alluvial plain comprised of Pleistocene and recent alluvium from granitic, volcanic, sedimentary, and metamorphic rock sources. The central section of the project crosses through the Dunnigan Hills subsection, which is an extension of the northern California Interior Coast Range. This area is characterized by well rounded, highly dissected hills derived from non-marine Pliocene mudstones, sandstones, and conglomerates. Slopes are generally low to moderate with elevations ranging from 200 to 250 feet (Miles and Goudey, 1997). The following sections provide additional information on regional climate, hydrology, soils, and vegetation.

1.3.1 Climate and Hydrology

The western part of the Sacramento Valley is characterized by a Mediterranean-type climate with cool, wet winters and hot, dry summers. The average annual temperature ranges from an average low of 37°F in December to an average high of 95°F in July. This moderate climate allows for a year-round growing season. Average annual precipitation is 20.9 inches, with approximately 83 percent of the rainfall occurring between November and March (Natural Resources Conservation Service [NCRS], 2008a). See Appendix A for detailed information.

The easternmost end of the project, near Line 172 A, is approximately 11 aerial miles west of the Sacramento River. Cache Creek, a tributary of the Sacramento River, generally parallels the proposed alignment and is located approximately 1.9 miles south of the western end of the study area near Hungry Hollow and 0.7 miles south of the study area near Yolo at the east end. Throughout most of the alignment, Cache Creek is generally between 3 to 4.5 miles to the south (Figure 1). The Dunnigan Hills divide the project into two separate watershed units. The western side of the study area is located in the Lower Cache Creek hydrologic sub area of the Valley-Putah Creek Hydrologic Unit (Hydrologic Unit Code [HUC] 18020110). This watershed encompasses approximately 77,904 acres. The eastern side of the study area is located in the Colusa Trough hydrologic sub area of the Colusa Basin Hydrologic Unit (HUC 18020104), which encompasses approximately 683,757 acres (California Department of Fish and Game [CDFG], 2008).

The Dunnigan Hills are highly dissected and characterized by numerous dendritic swales and drainages. Runoff is typically rapid, resulting in high intensity, but short duration flows in response to heavy rainfall events. The natural hydrology throughout the western Sacramento Valley has been significantly altered as a result of agricultural conversion and construction of irrigation canals, drainage ditches, levees, and dams.

1.4 Soils

The proposed pipeline bisects 15 different mapped soil units (Figures 2A-2L). Marvin silty clay loam [Mf] is the most common soil type along the western part of the alignment and consists of somewhat poorly drained silty clay loams that formed in alluvium from

sedimentary rocks (NRCS, 1972). The most common soil types in the Dunnigan Hills are the Corning Series [CtD2], Sehorn Series [SkD], and Sehorn-Balcom Complex [SmD]. The Corning Series is characterized by well-drained gravelly loam that was formed in softly consolidated, mixed alluvium. The Sehorn Series and Sehorn-Balcom Complex are comprised of well-drained clay. Finally, the length of pipeline from approximately Road 95A to the junction of line 172A largely crosses Yolo soils [Ya and Yb] that are well-drained silt loams and silty clay loams formed in alluvium derived from sedimentary material.

1.5 Plant Community Types Observed in the Study Area

Several plant community types are present along the proposed pipeline route. Orchards and irrigated field crops characterize the western end of the proposed alignment, from Line 400/401 east to Interstate 505. The central part of the proposed alignment through the Dunnigan Hills is characterized by annual grassland. The eastern section, roughly from the junction of County Road 95A and Road 17, is primarily irrigated crops. Descriptions of these community types are provided below.

1.5.1 Orchard

Orchards are found in two areas along the pipeline alignment. The first orchard is at the tie-in location to the existing Line 400/401. In this area, the proposed pipeline will roughly follow an existing agriculture road between two plum orchards that extend approximately 0.6 mile east to County Road 85 (Figure 3A). The second area is a relatively new almond orchard located near County Road 87 (Figures 3B and 3C). The orchard communities are intensively managed with uniformly spaced trees and an open understory to facilitate harvesting and pruning of the trees.

1.5.2 Irrigated and Dry Land Crops

Irrigated row crops are a dominant community within the western part of the Central Valley and are planted on the most fertile soils in the valley (CDFG, 2005). Alfalfa and tomatoes are common irrigated crops, with wheat and hay the predominant dry-land crops grown along the length of the proposed pipeline. Many of these crops are either flooded using water pumped from larger irrigation canals into smaller irrigation ditches along the edges of the fields, or are irrigated using overhead sprinkler systems. As with orchards, irrigated row crops and wheat crops are highly managed communities.

1.5.3 Annual Grassland

Annual grassland is the dominant community type through the Dunnigan Hills, roughly from Interstate 505 east to County Road 95A (Figures 3E through 3J). This community is comprised largely of annual species of grasses and forbs that germinate with fall rains, grow slowly in the winter months, and remain low in stature until spring when increasing temperatures stimulate rapid growth. Characteristic grass species found in the community include soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), medusa-head (*Taeniatherum caput-medusae*), fescue (*Vulpia myuros*), ryegrass (*Lolium multiflorum*) and wild oats (*Avena barbata, A. fatua*). Common annual forbs include lupine (*Lupinus bicolor*), filaree (*Erodium* spp.), blow-wives (*Achyrachaena mollis*), fiddleneck (*Amsinckia menziesii* var. *intermedia*), bur clover (*Medicago polymorpha*), and vetch (*Vicia villosa*).

SECTION 2

Areas Subject to Regulation under Section 404 of the Clean Water Act

2.1 Overview of Federal Wetland Regulation under the Clean Water Act

The USACE regulates discharge of dredge and fill material into waters of the U.S. (including wetlands) under Section 404 of the Clean Water Act (CWA). Waters of the U.S. are defined as all navigable waters, including (1) all tidal waters; (2) all interstate waters and wetlands; (3) all other waters such as lakes, rivers, streams (perennial or intermittent), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate commerce; (4) all impoundments of water mentioned above; (5) all tributaries to waters mentioned above; (6) territorial seas; and (7) all wetlands adjacent to waters mentioned above.

Wetlands are areas that "are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory, 1987). Any actions that involve the placement of fill material into jurisdictional waters and wetlands must comply with Section 404 of the CWA.

The limit of jurisdictional waters of the U.S. (including wetlands) in non-tidal waters extends to the Ordinary High Water Mark (OHWM), to adjacent wetlands above the OHWM, or, if not adjacent, to the limit of the wetlands. The OHWM is defined as the line on the shore established by the fluctuation of water and indicated by physical characteristics such as a natural line impressed on the bank, shelving, scouring, changes in the character of the soil, destruction of terrestrial vegetation, presence of litter or debris, or other appropriate evidence (33 Code of Federal Regulations [CFR] Section 328.4).

The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are "adjacent wetlands." When waters of the U.S. consist only of wetlands, the jurisdiction extends to the limit of the wetlands (33 CFR Section 328.3(c)).

2.2 Recent Changes in USACE Jurisdiction

In the *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, the Supreme Court determined that the use of wetlands by migratory birds as a link to interstate commerce is not fairly supported by the CWA, and that the USACE cannot solely rely upon this rule as the basis for jurisdiction over isolated wetlands. While jurisdiction over isolated wetlands is determined on a case-by-case basis, in general isolated, intrastate, and non-navigable waters are typically considered to be outside the authority of the CWA. However, isolated wetlands that support interstate commerce or wetlands in which the

degradation or destruction of the wetlands could affect the physical, biological, or chemical integrity of other waters of the U.S. are likely to be considered jurisdictional.

On June 5, 2007, the U.S. Environmental Protection Agency (EPA) issued guidance for the Supreme Court's decision in the *Rapanos v. United States* and *Carabell v. United States court* cases (EPA, 2007). Under this guidance, federal jurisdiction extends to (1) traditional navigable waters, (2) wetlands adjacent to traditional navigable waters, (3) non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. Jurisdiction over (1) non-navigable tributaries that are not relatively permanent, (2) wetlands adjacent to non-navigable tributaries that are not relatively permanent, and (3) wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary will be based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water. Jurisdiction will not be asserted over the following features: (1) swales or erosional features (e.g., gullies and small washes characterized by low volume, infrequent, or short duration flow), and (2) ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

2.3 State Wetland Regulations

Section 401 of the CWA specifies that states must certify that any activity subject to a federal permit (such as a USACE permit) meet all state water quality standards. In California, the State Water Resources Control Board and the regional boards are responsible for taking certification actions for activities subject to any permit issued by USACE. Wetlands and waters in the project area are subject to the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB) (Region 5S).

Pursuant to California's Porter-Cologne Water Quality Control Act, the RWQCBs also regulate the "discharge of waste" into "waters of the state." All parties proposing to discharge waste that could affect waters of the state must file a waste discharge report with the appropriate RWQCB. The terms "discharge of waste" and "waters of the state" are broadly defined in the Porter-Cologne Water Quality Act, such that discharges of waste include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact "waters of the state." Under state regulatory authority, any wetlands or other waters of the state, including isolated wetlands, are potentially subject to the jurisdiction of the RWQCB.

SECTION 3

Methods

A wetlands delineation (including waters of the U.S) was conducted for the proposed Line 406 pipeline project on April 4 and 5, 2007, by CH2M HILL biologists Tim Armstrong and Russell Huddleston. Additional surveys were conducted by Russell Huddleston on March 28, 2008, following a site visit with Erin Hess from the USACE on March 25, 2008. The project study area included the proposed 14-mile pipeline route and a 500-foot buffer on each side of the centerline for a total study area of approximately 1,697 acres (Figures 3A through 3L).

Previous reconnaissance field surveys were conducted on October 11 and 13, 2006, as part of the *L400/401 to L172A Feasibility and Routing Study* (CH2M HILL, 2006), which encompassed the four possible alternative routes: Route 1, 2A, 2B, and 3. The final route selected was a slight alteration of alternative route 3.

Prior to conducting the wetland delineation, additional field reconnaissance surveys were conducted in December 2006 to determine vegetation status following the September 2006 fire that burned approximately 14,000 acres in the Dunnigan Hills, including a portion of the proposed pipeline alignment. Because of the impacts on the grassland vegetation resulting from the fire, the wetland delineation was postponed until the vegetation component was fully discernable. The wetland delineation was conducted in accordance with the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2006). Except in limited instances, these guidelines require positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology for an area to be considered a wetland.

Sample points were established at 22 locations in areas considered to be potential wetlands and where appropriate, in adjacent upland areas (Figures 3A through 3L). At each sample location, the dominant plant species were identified and the absolute cover was visually estimated for each species. Given the relatively small size of the wetland features and the homogeneity of the plant community, vegetation estimates were made on the overall feature rather than a defined sample area. The dominant species within each vegetation strata (tree, shrub, and herb) included the most abundant species whose cumulative cover accounted for at least 50 percent of the total cover, as well as any single species that accounted for at least 20 percent of the total vegetative cover (USACE, 2006). Strata that contained less than 5 percent total cover were not considered in the dominance test. All taxonomic designations follow the *Jepson Manual Higher Plants of California* (Hickman, 1996). The wetland indicator status of each dominant species was determined using the *National List of Plant Species that Occur in Wetlands, Region 0* (Reed, 1988). A list of plant species observed at the sample locations, with the corresponding indicator status for Region 0, is provided in Table 1.

Wetland hydrology was determined based on observations of surface indicators such as depth of standing water and groundwater conditions observed in soil pits, if present. Where saturated soils or inundation were not observed because of to normal seasonal conditions, other indicators such as defined drainage channels, debris deposits, algal matting, and scouring were noted. Site topography, landscape position, surface water drainage patterns, and seasonal rainfall patterns also were considered for the hydrologic determination at each sample location.

Surface soils were examined in pits excavated with a sharpshooter shovel to depths ranging from 12 to 18 inches. Soil morphological features such as color, texture, and structure were noted for each sample pit. Soil texture was estimated in the field, and moist soil colors were determined using Munsell® soil color charts. Hydric soil determinations were based on indicators provided in the Arid West Regional Supplement (USACE, 2006) as well as *Field Indicators of Hydric Soils in the United States* (NRCS, 2006).

Wetland boundaries were determined in the field based on evident changes in vegetation, hydrology, soils, microtopography, and the presence of defined drainage patterns (if present). Sample point locations and wetland boundaries were mapped using a Trimble GeoXT® global positioning system (GPS) unit. Field data was then post-processed and differentially corrected and plotted on aerial photographs using geographic information system (GIS) software.

In addition to wetlands, other waters features, including ponds, irrigation canals, agricultural ditches, erosional channels, upland swales, and other drainages were also delineated and mapped using a combination of GPS field data and high-resolution aerial photographs.

Representative photographs are included in Appendix B, and the wetlands delineation data forms are included in Appendix C.

TABLE 1
Plant Species Observed at Sample Points and their Wetland Indicator Status

Scientific Name[a]	Common Name	Indicator Status[b]
Amsinckia menziesii	Common fiddleneck	NL
Avena barbata	Wild oat	NL
Bromus diandrus	Rip-gut brome	NL
Bromus hordeaceus	Soft chess	FACU-
Centaurea solstitialis	Yellow star thistle	NL
Convolvulus arvense	bindweed	NL
Crypsis schoenoides	Swamp timothy	OBL
Eleocharis macrostachya	Creeping Spikerush	OBL
Erodium cicutarium	Red-stem filaree	NL
Erodium botrys	Broad leaf filaree	NL
Eryngium sp.	Coyote thistle	FACW
Geranium dissectum	Cutleaf geranium	NL
Glyceria occidentalis (= *G. declinata*)	Mannagrass	OBL
Hordeum marinum ssp. *gussonianum*	Mediterranean barley	FAC
Hypochaeris radicata	Smooth cat's ear	NL
Lactuca seriola	Prickly lettuce	FAC
Lolium multiflorum	Ryegrass	FAC*
Lupinus bicolor	Miniature lupine	NL
Matricaria matricarioides	Pineapple weed	FACU
Medicago polymorpha	Bur clover	NL
Myosurus minimus	Tiny mouse tail	OBL
Plagiobothrys stipitatus	Slender popcorn flower	OBL
Plantago lanceolata	English plantain	FAC-
Poa annua	Annual bluegrass	FACW-
Psilocarphus brevissimus	Wooly marbles	OBL
Ranunculus muricatus	Spiny-fruit buttercup	FACW+
Rumex crispus	Curly dock	FACW-
Taeniatherum caput-medusae	Medusa-head	NL
Trifolium variegatum	White-tip clover	FACW-
Vicia vilosa	Vetch	NL
Vulpia myuros	Fescue	FACU*

Notes:
[a] Plant taxonomy follows *The Jepson Manual: Higher Plants of California* (Hickman, 1993).
[b] Wetland indicator status follow *Plants of the United States of America, Region 0* (Reed, 1988).

FAC = Facultative – Equally likely to occur in wetlands and non-wetlands (34 to 66 percent probability).
FACU = Facultative Upland – Estimated 67 to 99 percent probability of occurrence in non-wetlands.
FACW = Facultative Wetland – Estimated 67 to 99 percent probability of occurrence in wetlands.
NL = Not Listed – Not listed in National List of Plant Species that Occur in Wetlands; is presumed an upland plant.
OBL = Obligate Wetland – Occurs with an estimated 99 percent probability in wetlands.
+/- = Indicates greater (+) or lesser (-) tendency to occur in wetlands.
* = Indicates a tentative status code assignment.

SECTION 4

Results

A total of 1.41 acres of potentially jurisdictional waters, including Goodnow Slough and associated tributaries, seasonal wetlands, and seasonal wetland swales, were identified in the 1,697-acre study area. Other features identified in the study area included a constructed pond, irrigation canals, agricultural ditches, and upland swales that were considered non-jurisdictional. Ultimately, the USACE is responsible for determining the limits of federal jurisdiction under the Clean Water Act and the information provided in this report is intended to assist the USACE with that determination.

As previously noted, the approximately 14-mile pipeline route was divided into four segments based on the roads bisecting the pipeline alignment and vegetation communities encountered. The following sections present the findings for each of the four segments that are defined as follows:

- Segment 1—L400/401 to County Road 85, approximately 0.6 mile of orchards;
- Segment 2—County Road 85 to Interstate 505, approximately 5.0 miles of irrigated crops;
- Segment 3—Interstate 505 to County Road 95A, approximately 5.5 miles of annual grassland in the Dunnigan Hills; and
- Segment 4—County Road 95A to L172A, approximately 3.0 miles of irrigated crops.

A summary of all wetlands, waters, and other features identified during the delineation are provided in Table 2 at the end of this section. Representative site photographs and wetland data sheets are provided in Appendix B and C, respectively.

4.1 Segment 1

With the exception of a small area of annual grassland near the tie-in with the existing Line 401/404, this segment is characterized by irrigated orchards. No wetlands occur in this segment of the proposed alignment. The Hungry Hollow Canal is located approximately 500 feet east of County Road 85 and generally runs perpendicular to the proposed alignment (Figure 3A). The canal is owned and operated by the Yolo County Flood Control and Water Conservation District and is a north lateral off of the Adam West Canal. This feature supplies irrigation water to the orchards and agricultural fields throughout the Hungry Hollow area. Within the study area, the canal is approximately 20 feet wide and is a routinely maintained open channel.

4.2 Segment 2

Segment 2 of the alignment is located entirely within irrigated agricultural fields. The majority of the fields in this area are flood irrigated and, as a result, numerous small earthen agricultural ditches occur throughout this section of the alignment. In addition, two larger

irrigation canals, also managed by Yolo County Flood Control and Water Conservation District, are present in this area (Figures 3A through 3E). No wetlands or natural drainages occur in this segment of the proposed alignment.

4.3 Segment 3

Segment 3 includes the portion of the alignment through the Dunnigan Hills and contains all of the potential jurisdiction wetlands and other waters of the U.S. that were identified in the study area. Vegetation is predominantly annual grassland that is used primarily for sheep pasture. A small amount of irrigated pasture is present along the western end (near Highway 505) and scattered dry land crop fields and residential areas also occur throughout this section.

There is a large irrigation canal just east of the frontage road (Road 90 A) along Highway 505 that runs perpendicular to the proposed alignment at the juncture with County Road 17 (Figure 3E). The channel is approximately 35 feet wide in this area. During the April 2007 field survey shallow ponding was noted within the channel on the north side of County Road 17 and soils were moist to the south. At the time of the survey the channel bottom was vegetated with curly dock (*Rumex crispus*), ryegrass (*Lolium multiflorum*), cut-leaf geranium (*Geranium dissectum*), and cocklebur (*Xanthium strumarium*) throughout. Arroyo willow (*Salix lasiolepis*) was also present in some areas along the side banks. During the April 2007 survey, routine channel maintenance (vegetation and sediment removal) was observed in portions of this feature to the south of the study area.

An excavated, earthen irrigation ditch is present to the east of this canal. This ditch appears to be used to flood irrigate the pasture on the south side of County Road 19. Just east of this ditch is Goodnow Slough (Figure 3F). Goodnow Slough appears to be a natural drainage that has been partially channelized and is currently used as an irrigation canal. The channel is approximately 12 feet wide, devoid of vegetation, and appears to be routinely maintained. A large constructed pond is also present in this area, on the north side of County Road 19 (Figure 3F). The pond is characterized by open water with scattered arroyo willows along the edges.

4.3.1 Tributary Drainages

Three tributary drainage channels to Goodnow Slough are located on the north side of County Road 17 east of Interstate 505 (Figure 3F). These features have generally weakly expressed channels, although some sections of the drainages exhibit well-defined bed and bank characteristics. The average channel widths range from approximately 2 to 5 feet. Scattered vegetation within the channels includes Mediterranean barley and ryegrass. There is also a large patch of giant reed (*Arundo donax*) present along the lower part of Drainage No. 2. While these drainages were dry at the time of the surveys, erosional scouring and a large amount of debris along the barbed wire fence suggest these drainages are subject to high-intensity, ephemeral flows in response to storm events.

4.3.2 Seasonal Wetland 1 (sp-11 and sp-12)

Seasonal Wetland 1 is located at the terminus of a dendritic drainage/swale system immediately adjacent to Goodnow Slough (Figure 3F). Vegetation in this area consists of

scattered spikerush (*Eleocharis macrostachya*), mannagrass (*Glyceria declinata*), and Mediterranean barley (*Hordeum marinum* spp. *gussonianum*). Surface soil (0 to 8 inches) at this location is a dark grayish brown (2.5 Y 4/2) clay with approximately 15 percent light yellowish brown (2.5 Y 6/3) concentrations throughout the matrix. Below 8 inches, the soil is gleyed (Gley 6/5 GY) sandy clay loam with approximately 25 percent yellowish brown (10 YR 5/6) concretions in the matrix. Calcium carbonate concentrations are also present throughout the lower soil profile. At the time of the survey, the soils were saturated in the upper 2 inches and moist to a depth of 16 inches. In addition to receiving surface water from the upslope drainage, this area may also receive seepage water from the adjacent slough.

A second sample point was located in the upland swale located to the northeast of seasonal wetland 1 (Figure 3F). Mediterranean barley and bur clover are the dominant vegetation in this area, with approximately 20 percent bare ground. Surface soil in this area (0 to 3 inches) is a dark grayish brown (10 YR 4/2) sandy clay loam with approximately 5 percent brown (7.5 YR 4/4) concentrations along the root channels. From 3 to 15 inches, the soil is a mixture of dark grayish brown (10 YR 4/2) and dark gray (10 YR 4/1) sandy clay loam with approximately 15 percent brown (7.5 YR 4/4) and 5 percent black (10 YR 2/1) concentrations. This area appears to convey overland flows in response to storm events, but does not exhibit an OHWM and there was no evidence to suggest prolonged saturation or inundation occurs in this area.

4.3.3 Seasonal Wetland 2 (sp-13 and sp-14)

Seasonal Wetland 2 is located on the north side of County Road 17, immediately east of the dendritic drainage/swale feature that flows into Seasonal Wetland 1 (Figure 3F). This area is characterized by a broad, shallow topographic depression that exhibits a notable change in vegetation from the adjacent grassland community. Ryegrass is the dominant species throughout the basin with scattered Mediterranean barley, slender popcorn flower (*Plagiobothrys stipitatus*) and coyote thistle (*Eryngium* sp.). Surface soil (0 to 7 inches) in this location is a dark grayish brown (10 YR 3/2) clay loam with approximately 5 percent dark yellowish brown (10 YR 4/6) concentrations in the matrix. Below 7 inches, the soil is a grayish brown (10 YR 3/2) clay. The basin was dry during the March 28, 2008 survey, but algal matting was present throughout, suggesting the presence of ponded water earlier in the season.

The adjacent grassland area (sp-14) is characterized by non-native annual grasses, including fescue, wild oat, medusa-head and filaree. Soil in this area is a gravelly, brown (10 YR 4/3) clay loam in the upper 7 inches, becoming more of a clay texture with depth. No redoximorphic features or other indicators of hydric soil were noted at the time of the survey and there was no indication of seasonal saturation or inundation in this area.

4.3.4 Upland (sp-10)

This sample point is located in a in a relatively low-lying area characterized by Mediterranean barley and bur clover. The upper 1 inch of the soil is a dark grayish brown (10 YR 4/2) clay loam, with very few (less than 1 percent) brown (7.5 YR 4/4) concentrations along the root channels. Below 1 inch, the soil is a gravelly dark grayish brown (10 YR 4/2) clay with no redoximorphic features. No evidence of flowing water, saturation, or inundation was noted in this area.

4.3.5 Upland Swale/Drainage (sp-9 and sp-9a)

Sample point 9 was located on the south side of County Road 17 in a weakly expressed topographic swale feature, just downslope of a culvert under the roadway (Figure 3G). Vegetation throughout this area is characterized by Mediterranean barley and bur clover. The surface soil (from 0 to 2 inches) is a very gravelly, brown (10 YR 4/3) sandy clay loam with approximately 3 percent dark brown (7.5 YR 3/4) concentrations along the root channels. From 2 to 18 inches, the soil is a very gravelly, dark gray (10 YR 4/1) clay. This area appears to convey short duration overland flows in response to storm events, but does not exhibit an OHWM, nor does it show evidence of seasonal saturation or inundation.

A second sample point (sp-9a) was taken in a small drainage leading to the culvert on the north side of County Road 17 (Figure 3G). This drainage is located downslope of a broad, weakly expressed topographic swale. Vegetation in this area is predominantly soft chess and fescue with some Mediterranean barley and scattered curly dock also present. Soil in this area is a brown (10 YR 4/3) clay loam throughout the upper 16 inches, with no redoximorphic features. This area appears to convey short duration overland flows in response to storm events, but does not exhibit an OHWM or show evidence of prolonged seasonal saturation or inundation.

4.3.6 Upland Swale (sp-8)

Sample point 8 was established in a weakly expressed topographic swale feature, just down slope of a 16-inch-diameter culvert under County Road 17. Vegetation throughout this area is characterized by Mediterranean barley and bur clover. Surface soil to a depth of 2 inches is a gravelly, dark grayish brown (10 YR 4/2) sandy clay loam with approximately 2 percent brown (7.5 YR 4/4) concentrations along the roots channels. From 2 to 15 inches, the soil is a very gravelly, dark grayish brown (10 YR 4/2) clay with no redoximorphic features. This area may convey short duration overland flows in response to storm events, but does not exhibit an OHWM or show evidence of prolonged seasonal saturation or inundation.

4.3.7 Upland (sp-8a)

Sample point 8a is located in a low saddle area that was characterized by dense ryegrass. Surface soil in this area was a very dark grayish brown (10 YR 3/2) sandy clay loam from 0 to 8 inches. Very few (less than 1 percent) yellowish red (5 YR 4/6) concentrations are present along the root channels in the upper 2 inches, and very few dark brown (7.5 YR 3/4) concentrations are in the matrix from 2 to 8 inches. Below 8 inches, the soil is a dark grayish brown (10 YR 4/2) clay with very few dark brown (7.5 YR 3/4) concentrations in the matrix. This area may convey overland flow in response to storm events, but does not exhibit an OHWM and does not appear to support prolonged seasonal saturation or inundation.

4.3.8 Upland Swale (sp-8b)

This sample point is located in a weakly expressed topographic swale characterized by ryegrass and Mediterranean barley. Soil in the upper 7 inches is a dark grayish brown (10 YR 4/2) clay loam with no redoximorphic features. Soil color is the same between 7 and 16 inches, but the texture becomes clay. This area appears to convey short duration overland flows in response to storm events, but does not exhibit an OHWM or show evidence of prolonged seasonal saturation or inundation.

4.3.9 Seasonal Wetland Swale 1 (sp-7a, sp-7b, sp-7c)

This area is characterized by a weakly expressed topographic swale and excavated drainage leading to a 16-inch-diameter culvert on the north side of County Road 17 (Figure 3G). This area is shown as an intermittent blue-line drainage on the Madison USGS 7.5-minute quadrangle. Ryegrass and Mediterranean barley are the dominant species throughout the seasonal wetland swale. The surface soil (0 to 2 inches) is a dark grayish brown (10 YR 4/2) clay loam with approximately 2 percent yellowish red (5 YR 4/6) concentrations along the root channels. From 2 to 9 inches the soil is a very dark grayish brown (10 YR 4/1) clay loam with approximately 5 percent dark yellowish brown (10 YR 4/4) concentrations in the matrix. Soil below 9 inches is a very dark grayish brown (10 YR 3/2) clay with approximately 2 percent dark yellowish brown (10 YR 4/4; 10 YR 3/4) concentrations in the matrix. A small earthen berm (less than 12 inches high) is present along the south end of this feature, parallel to the road. This small berm appears to impede down slope drainage and resulting in increased seasonal saturation and inundation at this location as evidenced by algal matting in the lower swale area.

A sample point was also established in the drainage feature on the north side of the road that conveys flows into the 16-inch-diameter culvert (sp-7c). Ryegrass was the sole dominant plant species in the drainage with scattered curly dock and sparse wild oat. Soils are highly stratified with the matrix layers ranging dark grayish brown (10 YR 4/2 and 10 YR 4/3) to brown (10 YR 5/3). Few to common redoximorphic concentrations were observed throughout the soil profile ranging from yellowish red (5 YR 4/5) along the root channels to dark yellowish brown (10 YR 3/6) in the matrix. Soil texture is a clay loam in the upper 8 inches, becoming clay between 8 and 16 inches. This drainage feature appears to both convey flows and support some seasonal saturation and inundation.

One upland sample point (sp-7b) was established adjacent to the seasonal wetland swale and drainage area. Vegetation at this location is typical for the annual grassland habitat throughout the Dunnigan Hills and included species such as filaree, ryegrass, fescue and wild oat. Surface soil (0 to 6.5 inches) in this area is a brown (10 YR 4/3) sandy loam. Between 6.5 and 8 inches the soil is a stratified brown (10 YR 4/3) (7.5 YR 4/4) and grayish brown (10 YR 5/2) silt loam. Below 8 inches the soil is a dark grayish brown (10 YR 4/2) clay with very few (less than 1 percent) dark yellowish brown (10 YR 4/4) concentrations in the matrix. This area may support brief overland flows in response to storm events, but does not show any indication of prolonged saturation or inundation or an OHWM.

4.3.10 Upland Swale (sp-7)

Sample point sp-7 is located in a weakly expressed swale on the south side of County Road 17 downslope of a 16-inch-diameter culvert. Vegetation in the swale is similar to the grassland vegetation throughout this area and is characterized by ryegrass with scattered bur clover and soft chess. Soil in the upper 2 inches is a dark grayish brown (10 YR 4/2) clay loam with few (less than 2 percent) dark yellowish brown (10 YR 4/6) concentrations along the root channels. Below 2 inches the soil is a dark grayish brown (10 YR 4/2) clay with very few (less than 1 percent) dark yellowish brown (10 YR 4/6) concentrations in the matrix. This area appears to support highly ephemeral, short duration overland flows in response to storm events, but does not exhibit an OHWM or appear to be subject to prolonged saturation or inundation.

4.3.11 Upland Swale (sp-5)

This sample point was established in a weakly expressed topographic swale that flows to the south into a slightly eroded scour channel. Vegetation in the swale is similar to the adjacent grassland community with filaree and ryegrass the dominant species and scattered soft chess and wild oat also present. The top one inch of the soil is a very gravelly, dark brown (7.5 YR 3/2) sandy clay loam with few (less than 2 percent) strong brown (7.5 YR 4/6) concentrations along the root channels. From 1 to 12 inches the soil is a very gravelly, dark brown (7.5 YR 3/2) sandy clay loam with no redoximorphic features. This area likely conveys short duration overland flow in response to storm events, but does not exhibit an OHWM or appear to support prolonged saturation or inundation.

4.3.12 Upland (sp-6)

This sample point is located in a very weakly expressed topographic low area. Vegetation in this location is typical of the annual grassland observed throughout the Dunnigan Hills and included species such as wild oat, ryegrass, soft chess, bur clover and filaree. Surface soil (0 to 3 inches) in this area is a very gravelly, dark grayish brown (10 YR 4/2) clay loam underlain by a very gravelly, very dark grayish brown (10 YR 3/2) clay. Ephemeral overland flows may occur in this area in response to storm events, but no OHWM or evidence of prolonged seasonal saturation or inundation was evident at this location.

4.3.13 Seasonal Wetland 2 (sp-4, sp-4a, sp-4b)

This feature is shown as blue-line stream on the Madison 7.5-minute USGS quadrangle map. There is a very weakly expressed topographic low area on the north side of County Road 17 and an 18-inch-diameter culver under the road in this area. There is no apparent change in vegetation or evidence of flow on the north side of the road; therefore, sample points were located only on the south side of the road in this area. During the March 2008 survey, drift lines were present on the barb wire fence along the south side of the road, indicating significant flows overtopping the road and flowing down the swale in this area. Approximately 100 feet downslope from the road there is a well-defined erosional channel that exhibited recent evidence of scour during the March 2008 surveys. This erosional channel ends abruptly and overland flow continues through an upland swale (Figure 3H). Two sample points were established in the swale feature down slope of the culvert on the south side of County Road 17. Both points had similar vegetation and soil characteristic (sp-4 and sp-4a). Ryegrass and Mediterranean barley are the dominant plant species throughout the swale. Soil in the upper part (2 to 4 inches) is a dark grayish brown (10 YR 4/2) sandy clay loam with a few (1 to 2 percent) yellowish red (5 YR 4/6) concentrations along the root channels. Soils in the lower horizon were also dark grayish brown (10 YR 4/2) and ranged from gravelly sandy clay loam to clay texture. Soil cracks were noted in this area and the adjacent upland area during the March 2008 field visits. Soil in this area is mapped as the Sehorn-Balcom complex. Both of these soil series are Vertisols that are characterized by cracks that regularly close and open each year due to the shrink-swell of the clay as a result of changes in soil moisture (NRCS, 2008b and 1999). Soil cracks associated with Vertic soils are not considered to be an indicator of wetland hydrology (USACE, 2006). However, the debris (drift lines) along the barbed wire fence and the scouring observed in the erosional channel suggest that significant flows had recently occurred in this location. While flows in this area appear to be relatively high intensity,

they are likely highly ephemeral based on the slope, drainage patterns, and rapid runoff. This area did not appear to support prolonged saturation or inundation.

Sample point sp-4b was established in the grassland community adjacent to the swale. Dominant vegetation in this area includes ryegrass, soft chess, wild oat, and bur clover. Soil in the upper 10 inches is a dark grayish brown (10 YR 4/2) clay loam underlain by a brown (10 YR 4/3) clay. Surface cracks in the soil were also evident in this area. This area may be subject to short duration overland flow in response to stormwater runoff, but no evidence of prolonged saturation, inundation, or an OHWM was observed.

4.3.14 Upland (sp-3)

Sample point 3 is located in a topographic low area south of County Road 17. The vegetation is similar throughout this area and is characterized by soft chess and Mediterranean barley with sparse curly dock, bur clover and miniature lupine. Soil in this area is a gravelly, dark grayish brown (10 YR 4/2) clay loam throughout the upper 16 inches. No redoximorphic features or other indicators of hydric soil were observed. No evidence of recent flow or prolonged seasonal saturation/inundation was noted at this location.

4.3.15 Upland (sp-2)

Sample point sp-2 was located in a low saddle area between two rolling hills. The grassland habitat in this area is characterized by Mediterranean barley with sparse soft chess and ryegrass. Soil throughout the upper 4 inches is a gravelly, dark grayish brown (10 YR 4/2) clay loam, becoming clay below 4 inches. No redoximorphic features or other indicators of hydric soil were observed. No OHWM, evidence of ephemeral flow, or wetland hydrology was noted in this location.

4.3.16 Upland Swale (sp-1)

The feature is a weakly expressed drainage swale at the base of a rolling hill that is shown on the USGS Woodland quadrangle map as and intermittent blue-line drainage. Ryegrass is dominant plant species throughout the swale, but is also abundant throughout the adjacent grassland area. Associated species with relatively low cover in this area included soft chess, Mediterranean barley, wild oat, yellow star-thistle (*Centaurea solstitialis*), bur clover, and prickly lettuce (*Lactuca serriola*). Surface soil (0 to 4 inches) is a dark grayish brown (10 YR 4/1) clay loam. From 4 to 12 inches the soil is a gravelly, very dark grayish brown (10 YR 4/1) clay. No redoximorphic features or other indicators of hydric soil were noted in the upper 12 inches of the soil profile. This feature likely conveys short duration, overland flows in response to heavy rainfall, but no OHWM or evidence of prolonged inundation or saturation were noted in this area.

4.4 Segment 4

Segment 4 of the proposed alignment is located almost entirely within irrigated agricultural fields. No wetlands were observed in this section. The Acacia Canal, a constructed agricultural irrigation canal, is located in this section between County Road 96 and Interstate 5 (Figure 3K). This feature is approximately 8 to 10 feet wide and supports a narrow riparian corridor that is characterized by valley oak (*Quercus lobata*) and California

walnut (*Juglans hindsii*). Scattered willow (S*alix sp.*), cottonwood (*Populus fremontii*), and Himalayan blackberry (*Rubus discolor*) are also present in some areas along the canal. Common herbaceous species along the banks include dallisgrass (*Paspalum dilatatum*), barnyard grass (*Echinochloa crus-galli*), curly dock, milk thistle (*Silybum marinum*), mustard (*Hirschfeldia incana*), and Queen Anne's lace (*Daucus carota*).

TABLE 2
Wetlands and Waters Survey Results by Sample Location for the PG&E Yolo Pipeline Route 406

Feature	Total Area (acres)	Hydrophytic Vegetation	Wetland Hydrology	Hydric Soils	Waters of the U.S./ Wetlands[a]	Notes
Segment 1						
Hungry Hollow Canal	0.58	None	Yes	N/A	No	Constructed irrigation canal west of County Road 85; routinely maintained; approximately 20 feet wide. Pipeline will be installed using directional drill or jack and bore under the canal.
Segment 2						
Irrigation Canal 1	0.37	None	Yes	N/A	No	Constructed irrigation canal east of County Road 88A; routinely maintained; approximately 15 feet wide. Pipeline will be installed using directional drill or jack and bore under the canal.
Irrigation Canal 2	0.35	None	Yes	N/A	No	Constructed irrigation canal west of Interstate 505; routinely maintained; approximately 15 feet wide. Pipeline will be installed using directional drill or jack and bore under the canal.
Agricultural Drainage Ditches	1.81	None	Yes	N/A	No	Numerous constructed agricultural drainages for localized conveyance of irrigation water occur throughout this segment. Pipeline would likely be installed using either open cut trench or directional drill in these areas; all drainages would be restored to the original condition following construction.
Segment 3						
Irrigation Canal 3	0.87	Yes	Yes	N/A	No	Constructed canal adjacent to Interstate 505, approximately 35 feet wide. Pipeline will be installed using directional drill or jack and bore under the canal and highway at this location.
Agricultural Drainage Ditch	0.10	None	Yes	N/A	No	Agricultural drainages for localized conveyance of irrigation water to pasture land to the south. Proposed project would not affect this feature.
Goodnow Slough	0.79	None	Yes	N/A	Yes	Historical natural feature that has been partially channelized and is routinely maintained for conveyance of irrigation water. Proposed project would not affect this feature.
Pond	1.48	No	Yes	N/A	No	Constructed pond with sparse riparian vegetation along edges. Appears to be a constructed reservoir for irrigation water storage. Proposed project would not affect this feature.

TABLE 2
Wetlands and Waters Survey Results by Sample Location for the PG&E Yolo Pipeline Route 406

Feature	Total Area (acres)	Hydrophytic Vegetation	Wetland Hydrology	Hydric Soils	Waters of the U.S./ Wetlands[a]	Notes
Drainage 1	0.04	No	Yes	N/A	Yes	Tributary to Goodnow Slough; weakly expressed bed and bank bed characteristics with some evidence of scouring along the channel; this drainage appears to support ephemeral flows in response to storm events. Proposed project would not affect this feature.
Drainage 2 & 3	0.07	No	Yes	N/A	Yes	Tributaries to Goodnow Slough – weakly expressed drainages to the north, but well defined bed and bank characteristics near County Road 17; drainages appear to support high intensity, but ephemeral flows in response to storm events. Proposed project would not affect these features.
Seasonal Wetland 1	0.01	Yes	Yes	Yes	Yes	Seasonal wetland area immediately adjacent to Goodnow slough. Proposed project would not affect this feature.
Upland Swale (sp-11)	0.18	No	No	No	No	Weakly expressed topographic swale, likely conveys ephemeral overland flows in response to storm events, but does not exhibit an OHWM or evidence of wetland hydrology. Potential temporary impacts on this feature during construction.
Seasonal Wetland 2 (sp-13)	0.18	Yes	Yes	Yes	Yes	Shallow topographic depression located adjacent to ephemeral drainage channel that is tributary to Goodnow Slough.
Upland Swale (sp-9)	0.15	Yes	No	No	No	Weakly expressed swale feature shown as an intermittent blue line on USGS topographic map; likely conveys some highly ephemeral overland flow in response to storm events but has no OHWM or evidence of prolonged saturation or inundation.
Upland Swale/ Drainage (sp-9a)	0.75	No	No	No	No	Weakly expressed swale feature shown as an intermittent blue line on USGS topographic map; likely conveys some highly ephemeral overland flow in response to storm events but has no OHWM or evidence of prolonged saturation or inundation.
Upland Swale (sp-8)	0.51	No	No	No	No	Weakly expressed swale feature; likely conveys some highly ephemeral overland flow in response to storm events but has no OHWM or evidence of prolonged saturation or inundation.
Upland Swale (sp-8b)	0.43	No	No	No	No	Weakly expressed swale feature; likely conveys some highly ephemeral overland flow in response to storm events but has no OHWM or evidence of prolonged saturation or inundation.

TABLE 2
Wetlands and Waters Survey Results by Sample Location for the PG&E Yolo Pipeline Route 406

Feature	Total Area (acres)	Hydrophytic Vegetation	Wetland Hydrology	Hydric Soils	Waters of the U.S./ Wetlands[a]	Notes
Seasonal Wetland Swale 1 (sp-7a)	0.15	Yes	Yes	Yes	Yes	Weakly expressed swale feature shown as an intermittent blue line on USGS topographic map; berm along roadside impedes flows in this area and appears to result in seasonal ponding.
Drainage (sp-7c)	0.02	Yes	Yes	Yes	Yes	Roadside drainage to culvert; shown as an intermittent blue line on USGS topographic map; area appears to support ephemeral flows as well as seasonal ponding due to restricted drainage at the culvert.
Upland Swale (sp-7)	0.06	Yes	No	No	No	Weakly expressed swale area shown as a blue line on the USGS topographic map. This area appears to convey some ephemeral overland flows in response to storm events, but does not exhibit an OHWM or evidence of prolonged saturation or inundation.
Upland Swale (sp-5)	0.16	No	No	No	No	Weakly expressed swale feature; likely conveys some highly ephemeral overland flow in response to storm events but has no OHWM or evidence of wetland hydrology
Seasonal Wetland Swale 2 (sp-4/sp-4a)	0.04	Yes	No	No	Yes[b]	Weakly expressed swale area shown as a blue line on the USGS topographic map. This area appears to convey overland flows in response to storm events to the south into a well defined, but discontinuous erosional scour channel; drift lines observed on fence and erosional scouring noted in this area, but there was no evidence of prolonged seasonal saturation or inundation.
Erosional Channel (sp-4)	0.11	No	Yes	N/A	Yes[b]	Erosional scour channel, devoid of vegetation; shown as an intermittent blue line on the USGS topographic map; evidence of significant flow in this area based on significant scouring at head cut area. Channel dissipates into upland swale to the southeast.
Upland Swale (sp-4)	0.05	No	No	N/A	No	Weakly expressed swale area shown as a blue line on the USGS topographic map. This area appears to convey some ephemeral overland flows in response to storm events, but does not exhibit an OHWM or show evidence of prolonged saturation or inundation.
Upland Swale (sp-3)	0.04	No	No	No	No	Weakly expressed swale located in the vicinity of an intermittent blue line shown on the USGS topographic map. This area appears to convey some ephemeral overland flows in response to storm events, but does not exhibit an OHWM or show evidence of prolonged saturation or inundation.

TABLE 2
Wetlands and Waters Survey Results by Sample Location for the PG&E Yolo Pipeline Route 406

Feature	Total Area (acres)	Hydrophytic Vegetation	Wetland Hydrology	Hydric Soils	Waters of the U.S./ Wetlands[a]	Notes
Upland Swale (sp-1)	0.33	Yes	No	No	No	Weakly expressed swale located in the vicinity of an intermittent blue line shown on the USGS topographic map. This area appears to convey some ephemeral overland flows in response to storm events, but does not exhibit an OHWM or show evidence of prolonged saturation or inundation.
Segment 4						
Acacia Canal	0.80	Yes	Yes	---	No	Constructed irrigation canal, approximately 8 to 10 feet wide. This feature supports narrow band of riparian vegetation. The pipeline placement will be located on the south side of the canal and cross the pipeline by directional drill or jack and bore under County Road 96.

Notes:

[a] Preliminary jurisdictional determination subject to verification by the USACE.
[b] This area was considered a potential seasonal wetland swale by the USACE during the March 25, 2998 field verification.

4.5 Summary of Potential Jurisdictional and Non-jurisdictional Features

A wetland delineation was conducted for PG&E's proposed 14-mile natural gas pipeline (Line 406) in Yolo County, California. The project study area included the centerline of the proposed pipeline and a 500-foot buffer to either side for a total of approximately 1,697 acres. A total of 1.41 acres of potential jurisdictional wetlands and other waters of the U.S. were identified in the project study area (Table 3). An additional 9.02 acres of non-jurisdictional features, including a constructed pond, irrigation canals, agricultural ditches, and upland swales also occur in the study area.

TABLE 3
Summary of Potential Jurisdictional and Non-jurisdictional Features Identified in the Project Study Area

	Acreage
Potential Jurisdictional Wetland and Other Waters	
Goodnow Slough	0.79
Drainages (tributary to Goodnow Slough)	0.11
Seasonal Wetlands	0.19
Seasonal Wetland Swales /Drainage	0.21
Erosional Channel	0.11
Total	**1.41**
Non-Jurisdictional Wetland and Other Waters	
Constructed Pond	1.48
Canals	2.97
Agricultural Drainage Ditches	1.91
Upland Swales / Drainage	2.66
Total	**9.02**

SECTION 5

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