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To: Molly Sandomire

From: Andy Mieske

Date: May 23, 2017

RE: Aquatic Resources Assessment for the Fulton-Fitch Mountain Reconductoring Project in Sonoma County, California

The Pacific Gas and Electric Company (PG&E) proposes to reconductor the Fulton-Fitch Mountain power lines between the cities of Windsor and Healdsburg in Sonoma County, California. Garcia and Associates (GANDA) conducted an onsite aquatic resources assessment within four study areas associated with this project over a total of 2.13 acres. The attached map illustrates the location and extent of a total of 0.013 acre of seasonal watercourse and 0.075 acre of seasonal wetland within the four study areas. The following discussion summarizes the methods used during the site investigation and provides a description of the aquatic resources identified. Should you have any questions regarding this investigation, please contact Andy Mieske: desk (530) 564-4132; cell phone (916) 524-1667.

METHODS

This investigation followed the routine wetland delineation methods described in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), and the *Corps Regulatory Guidance Letter No. 05-05 Ordinary High Water Mark Identification* (USACE 2005). The study areas lie within the Arid West Region described in the supplement. Prior to field investigations, GANDA biologists reviewed available aerial imagery, topographical maps, and soil maps of the study areas to characterize the vegetation, soils, topography, and hydrology in the area. Vegetation Ecologist Andy Mieske conducted a systematic field survey on March 28, 2017 to map

the location and extent of aquatic resources within the study areas. During the survey, the investigator mapped areas as wetlands that had a predominance of hydrophytic vegetation and evidence of wetland hydrology and hydric soils, and completed paired sets of data forms at plots on either side of the lateral edge of representative wetland boundaries. Mr. Mieske mapped long linear features that did not meet the definition of wetlands, but which convey water within a culvert or channel with a defined bed and bank as water features, as evidenced by an ordinary high water mark (OHWM). The surveyor mapped features and plot locations using a sub-meter accurate Trimble Geo XT Global Positioning System (GPS) device on a 1:1,800 scale base map with 2013 aerial imagery. GANDA downloaded and differentially corrected the GPS data using the nearest available base-station data.

The field investigator identified plant species using the Jepson Manual (Baldwin et al. 2012); plant nomenclature follows the Jepson online interchange (UC Berkeley 2017). The specific wetland indicator status, from the *2016 National Wetland Plant List* (Lichvar et al. 2016), of each species observed within sampling plots has been reported on the attached data forms.

ENVIRONMENTAL SETTING

The following provides general descriptions of the upland vegetation and soil types within the study areas.

Vegetation

The Project occurs within the outer north coast ranges subregion of the California Floristic Province. Blue oak woodland, Oregon white oak woodland, non-native grassland and asphalt occupy the upland portion of the study areas. The results section describes the vegetation associated with the aquatic resources.

Bailhache Avenue Study Area

The non-native grassland within the Bailhache Avenue study area supports an assemblage of herbaceous native and non-native grasses and forbs including California oatgrass (*Danthonia californica*), curly dock (*Rumex crispus*), cut-leaved geranium (*Geranium dissectum*), fennel (*Foeniculum vulgare*), field bindweed (*Convovulus arvensis*), Harding grass (*Phalaris aquatica*), Klamathweed (*Hypericum perforatum*), little rattlesnake grass (*Briza minor*), prickly sow-thistle (*Sonchus asper*), rattlesnake grass (*Briza maxima*), rip-gut brome (*Bromus diandrus*), scarlet yellow -loosestrife (*Lysimachia arvensis*), small fescue (*Festuca microstachys*), spring vetch (*Vicia sativa*), sticky mouse-ear chickweed (*Cerastium glomeratum*), toad rush (*Juncus bufonius*), and wild oat (*Avena fatua*) as well as coast live oak (*Quercus agrifolia*) tree seedlings, poison-oak (*Toxicodendron diversilobum*) shrubs, Himalayan blackberry (*Rubus armeniacus*) brambles, and on the periphery blue oak (*Quercus douglasii*) trees.

Pull Site Study Area

The pull site study area is predominantly non-native grassland within a power-line right-of-way with blue oak and Oregon white oak woodland at the lateral edges. The herbaceous grassland supports California oat grass, cut-leaved geranium, hedgehog dogtail grass (*Cynosurus echinatus*), Henderson's shooting star (*Dodecatheon hendersonii*), Klamathweed, large sweet vernal grass (*Anthoxanthum odoratum*), Pacific wood-rush (*Luzula comosa*), small fescue, smooth cats-ear (*Hypochaeris glabra*), soap plant (*Chlorogallum pomeridianum*), soft chess (*Bromus hordeaceus*), spring vetch, stick sedge (*Carex multicaulis*), western buttercup (*Ranunculus occidentalis*), yarrow (*Achillea millefolium*), and yellow starthistle (*Centaurea solstitialis*). The blue oak and Oregon white oak woodland contains a dense overstory canopy of blue oak, Oregon white oak (*Quercus garryana*), and Pacific madrone (*Arbutus menziesii*) trees above a shrub canopy comprised of common manzanita (*Arctostaphylos manzanita*), poison-oak, and Douglas-fir (*Pseudotsuga menziesii*) seedlings above a relatively sparse herbaceous understory of species within the adjacent non-native grassland.

Mt Weske Drive Study Area

A non-native grassland supporting a sparse cover of blue oak and coast live oak trees and common manzanita and coyote brush (*Baccharis pilularis*) shrubs at the lateral edge comprises the upland portion of the Mt Weske Drive study area. Dominant herbaceous species include cut-leaved geranium, lepor barley (*Hordeum murinum* ssp. *leporinum*), Mediterranean barley (*Hordeum marinum*), rye-grass (*Festuca perennis*), small fescue, smooth cat's ear, soft chess, subterranean clover (*Trifolium subterraneum*), and toothed medick (*Medicago polymorpha*). The grassland supports a sparse cover of Baltic rush (*Juncus balticus*), California buttercup (*Ranunculus californicus*), common flax (*Linum usitatissimum*), curly dock, English plantain (*Plantago lanceolata*), field madder (*Sherardia arvensis*), foothill sedge (*Carex tumulicola*), Harding grass, Italian thistle (*Carduus pycnocephalus*), little rattlesnake grass, long-beaked filaree (*Erodium botrys*), Mayweed chamomile (*Anthemis cotula*), rosy sandcrocus (*Romulea rosea*), soap plant, spring vetch, stinkwort (*Dittrichia graveolens*), sticky mouse-ear chickweed, sun cup (*Taraxia ovata*), toad rush, wild oat, and yellow starthistle.

Approximate New Culvert Location Study Area

The southern study area lies within a vineyard of wine grape (*Vitis vinifera*) seedlings intermixed with non-native grassland supporting annual bluegrass (*Poa annua*), Baltic rush, common flax, cut-leaved geranium, English plantain, field bindweed, field madder, Italian thistle, large sweet vernal grass, lepor barley, little rattlesnake grass, long-beaked filaree, Mediterranean barley, prickly sow-thistle, red-stemmed filaree (*Erodium cicutarium*), rip-gut brome, rye grass, scarlet yellow-loosestrife, soft chess, spring vetch, sticky mouse-ear chickweed, toothed medick, and wild oat.

Soils

Table 1 describes the soil map units and inclusions within the study areas. The soil map units in the project study areas lack landforms designated as hydric. Field investigations identified "hydric" soil based on observations of at least one hydric soil indicator. Appendix C provides the National Resources Conservation Service hydric soils listing and soil maps for the four study areas.

Table 1 Soil Map Units in the Study Areas

Map Symbol	Map Unit	Inclusions (landforms) [1]	Hydric Status	Hydric Criteria [2]
CgC	Clough gravelly loam, 2 to 9 percent slopes	Clough Positas Manzanita	No No No	- - -
FaF	Felta very gravelly loam, 30 to 50 percent slopes	Felta Lanager Spreckles Toomes	No No No No	- - - -
FaE	Felta very gravelly loam, 15 to 30 percent slopes	Felta Guenoc Spreckles Toomes	No No No No	- - - -
FaD	Felta very gravelly loam, 5 to 15 percent slopes	Felta Unnamed Guenoc Laniger Spreckles Toomes	No No No No No No	- - - - - -

Notes:

1. Hydric landforms

Tidal flats (1); marshes (2), basin floors (3); rims (4); flood plain (5); depressions (6); dikes (7); and back swamps (8); valleys (9)

2. Hydric criteria codes

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
   - B. are poorly drained or very poorly drained and have either:
     1). a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches; or
     2). a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 inches/hour in all layers within a depth of 20 inches; or
     3). a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 inches/hour in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

SOURCE: NRCS 2017

RESULTS

The field investigation identified three seasonal watercourses and a seasonal wetland within the study areas. These aquatic resources have been assigned an alphanumeric binomial label (e.g., SEW1000) displayed on the map in Appendix A. The first part of the binomial consists of an acronym for the feature type (i.e., SEW for seasonal watercourse). Each wetland and upland plot has been assigned a three-digit number included on the data forms and maps (e.g. 001). The map in Appendix A displays the plot locations as well as the location and extent of the aquatic resources mapped in this survey. Wetland delineation data forms describe the dominant vegetation, hydrology, and soil observations at each sample plot (see Appendix B).

Field investigations identified and mapped a total of 0.013 acre of seasonal watercourses and 0.075 acre of seasonal wetland within the four study areas. The investigator mapped the OHWM of the seasonal watercourses based on an observation of physical characteristics indicating flowing or standing water, including sediment deposits within the bed and shelving along the bank.

Seasonal Watercourse

Seasonal watercourses in the study areas convey flow seasonally or following rain events. The seasonal watercourse in the Bailhache Avenue study area supports less than five percent vegetation cover comprised of American deerweed (*Acmispon americanus*, UPL), common groundsel (*Senecio vulgaris*, FACU), English plantain (FAC), large sweet vernal grass (FAC), red-stemmed filaree (UPL), rough cat's ear (*Hypochaeris radicata*, FACU), and rye grass (FAC). The seasonal watercourse in the Mt Weske Drive study area supports less than five percent cover of hydrophytes including pennyroyal (*Mentha pulegium*, OBL), rye grass (FAC), and Himalayan blackberry (*Rubus armeniacus*, FAC). The seasonal watercourse in the approximate location of new culvert study area lacks vegetation.

Seasonal Wetland

The seasonal wetland at the Mt Weske Drive site lies at the footslope of a broad swale at the confluence of two slopes. A seasonal watercourse upslope of the study area supplies flow to the seasonal wetland. At the location of an existing native surface road crossing, the flow within the seasonal wetland becomes channelized within narrow bed and banks and drains into a seasonal watercourse that flows through a culvert out of the study area. Logs have been placed within the channelized portion of the seasonal wetland.

Dominant vegetation within the seasonal wetland includes California oat grass (FAC), California yampah (*Perideridia californica*, FACW), foothill sedge (FACU), hedge hyssop (*Lythrum hyssopifolium*, OBL), iris-leaved rush (*Juncus xiphioides*, OBL), Mediterranean barley (FAC), Pacific wood-rush (FAC), pennyroyal (OBL), rye grass (FAC), spike rush (*Eleochaeris macrostachya*,

OBL), spiny-fruit buttercup (*Ranunculus muricatus*, FACW), and tall flatsedge (*Cyperus eragrostis*, FACW). Associated plants include California buttercup (FACU), curly dock (FAC), Harding grass (FACU), rough cat's ear (FACU), small fescue (UPL), and subterranean clover (UPL).

REFERENCES CITED

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Lichvar, R. W., D. L. Banks, W. N. Kirchner, and N. C. Melvin. 2016. The *National Wetland Plant List:* 2016 wetland ratings. Phytoneuron: 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X http://wetland_plants.usace.army.mil/

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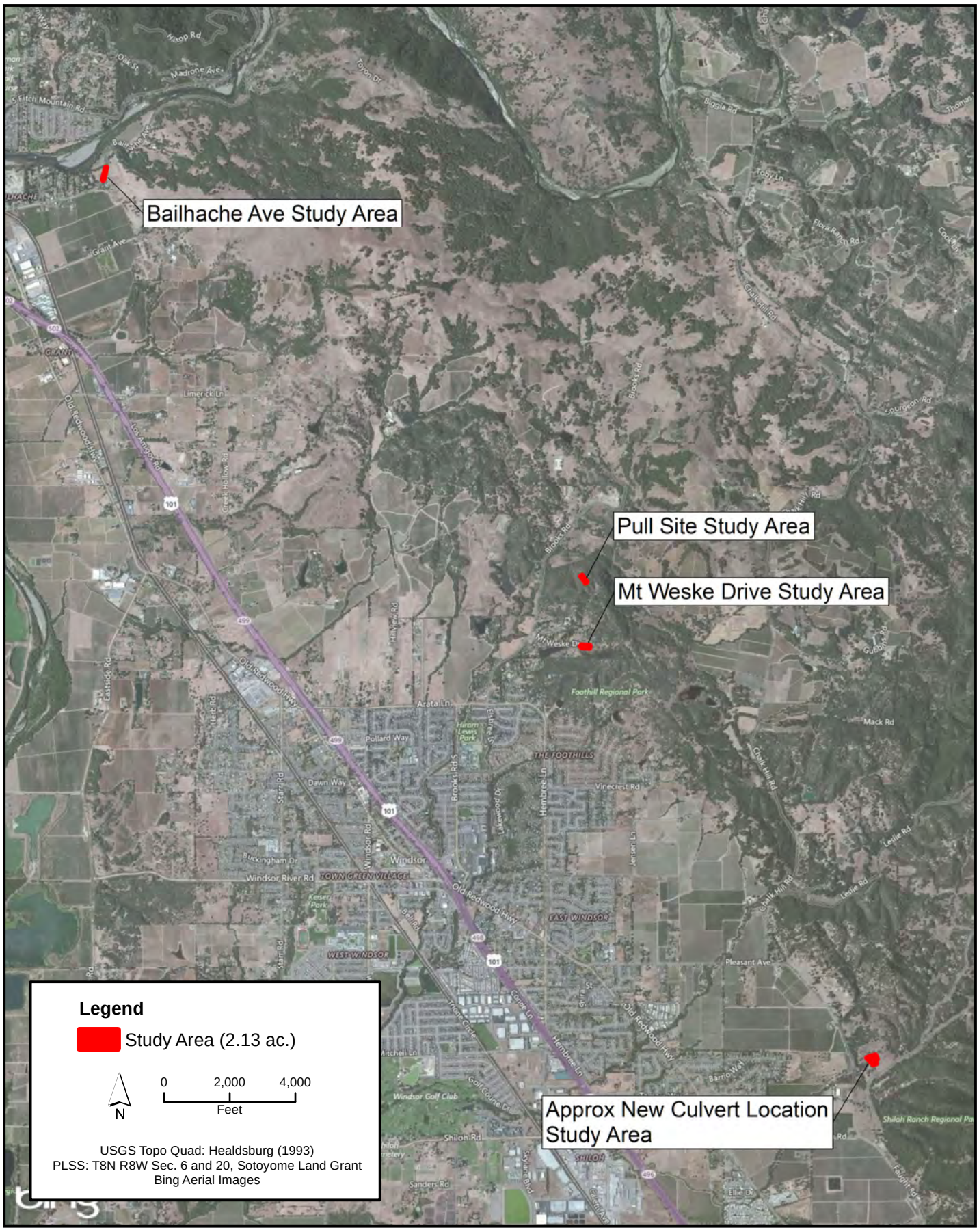
Photo 1 Seasonal watercourse SEW1000 in the Bailhache Avenue study area

Photo 2 Upland pull site study area

Photo 3 Logs in channelized seasonal wetland SW1 in Mt Weske Drive study area

Photo 4 Seasonal watercourse SEW3000 in southern study area

Appendix A – Wetland Maps



GANDA

Study Areas Overview
Fulton-Fitch Mountain Reconductoring Project

Sonoma County, CA
April 2017

122°50'45"W

122°50'40"W

122°50'35"W

38°36'25"N

38°36'20"N

Fulton-Fitch Mountain Reconductoring Project
April 2017

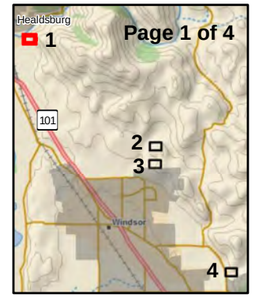
Bailhache Ave Study Area

Legend

- Study Area of 4 Sites (2.13 ac.)
- Upland Plot
- Wetland Plot
- Existing Native Surface Road
- Channel and Approaches to be Spanned with Steel Plates

Wetland and Water Features

- Seasonal Watercourse (SEW)
- Seasonal Wetland (SW)
- Culvert



N

0 50 100
Feet

1 inch = 100 feet

Notes:
1. Google Imagery (10/11/2013)
2. Projection: UTM Nad 83 Z10N

USGS Topo Quad: Healdsburg (1993)
PLSS: T8N R8W Sec. 6 and 20, Sotoyome Land Grant

TRC Contact: Molly Sandomire
Prepared by: Garcia and Associates/530-823-3151
Delineated by: Andy Mieske
Delineation Survey Date: 03-28-2017
Drawn By: Chelsea Barker-Switzer

GANDA

Aquatic Resources Map

122°47'45"W 122°47'40"W 122°47'35"W 122°47'30"W

38°34'25"N

38°34'20"N

Fulton-Fitch Mountain Reconductoring Project
April 2017

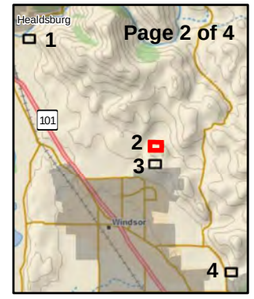
Pull Site Study Area

Legend

- Study Area of 4 Sites (2.13 ac.)
- Upland Plot
- Wetland Plot
- Existing Native Surface Road
- Channel and Approaches to be Spanned with Steel Plates

Wetland and Water Features

- Seasonal Watercourse (SEW)
- Seasonal Wetland (SW)
- Culvert



N

0 50 100
Feet

1 inch = 100 feet

Notes:
1. Google Imagery (10/11/2013)
2. Projection: UTM Nad 83 Z10N

USGS Topo Quad: Healdsburg (1993)
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Delineated by: Andy Mieske
Delineation Survey Date: 03-28-2017
Drawn By: Chelsea Barker-Switzer

GANDA

Aquatic Resources Map

122°47'45"W 122°47'40"W 122°47'35"W 122°47'30"W

38°34'5"N

38°34'0"N

Fulton-Fitch Mountain Reconductoring Project
April 2017

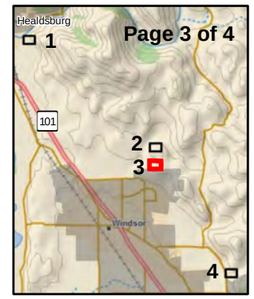
Mt Weske Drive Study Area

Legend

- Study Area of 4 Sites (2.13 ac.)
- Upland Plot
- Wetland Plot
- Existing Native Surface Road
- Channel and Approaches to be Spanned with Steel Plates

Wetland and Water Features

- Seasonal Watercourse (SEW)
- Seasonal Wetland (SW)
- Culvert



N

0 50 100
Feet

1 inch = 100 feet

Notes:
1. Google Imagery (10/11/2013)
2. Projection: UTM Nad 83 Z10N

USGS Topo Quad: Healdsburg (1993)
PLSS: T8N R8W Sec. 6 and 20, Sotoyome Land Grant

TRC Contact: Molly Sandomire
Prepared by: Garcia and Associates/530-823-3151
Delineated by: Andy Mieske
Delineation Survey Date: 03-28-2017
Drawn By: Chelsea Barker-Switzer

GANDA

Aquatic Resources Map

122°45'55"W 122°45'50"W 122°45'45"W 122°45'40"W

38°32'0"N

38°31'55"N

Fulton-Fitch Mountain Reconductoring Project
April 2017

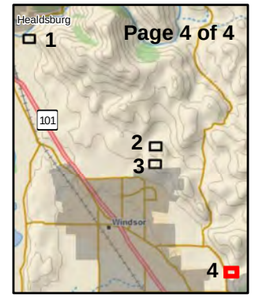
Approx New Culvert Location
Study Area

Legend

- Study Area of 4 Sites (2.13 ac.)
- Upland Plot
- Wetland Plot
- Existing Native Surface Road
- Channel and Approaches to be Spanned with Steel Plates

Wetland and Water Features

- Seasonal Watercourse (SEW)
- Seasonal Wetland (SW)
- Culvert



N

0 50 100
Feet

1 inch = 100 feet

Notes:
1. Google Imagery (10/11/2013)
2. Projection: UTM Nad 83 Z10N

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TRC Contact: Molly Sandomire
Prepared by: Garcia and Associates/530-823-3151
Delineated by: Andy Mieske
Delineation Survey Date: 03-28-2017
Drawn By: Chelsea Barker-Switzer

GANDA

Aquatic Resources Map

Appendix B – Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fulton-Fitch Mountain Reconductoring City/County: Sonoma County Sampling Date: Mar 28, 2017

Applicant/Owner: PG&E State: CA Sampling Point: 001

Investigator(s): Andy Mieske Section, Township, Range: Section 6, T8N, R9W

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): C Lat: 38.5669224280234 Long: -122.793688173755 Datum: NAD 83

Soil Map Unit Name: Felta very gravelly loam, 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Festuca perennis*	26	yes	FAC
2. *Hordeum marinum*	13	yes	OBL
3. *Eleocharis macrostachya*	9	no	OBL
4. *Ranunculus muricatus*	7	no	FACW
5. *Danthonia californica*	6	no	FAC
6. *Hypochaeris radicata*	4	no	FACU
7. *Juncus xiphioides*	3	no	OBL
8. *Trifolium subterraneum*	3	no	UPL
Total Cover:	71		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 29 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = 0
FAC species _____	x 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: _____ (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-12	10YR 5/1	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 5

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 4

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Fulton-Fitch Mountain Reconductoring City/County: Sonoma County Sampling Date: Mar 28, 2017

Applicant/Owner: PG&E State: CA Sampling Point: 002

Investigator(s): Andy Mieske Section, Township, Range: Section 6, T8N, R9W

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): C Lat: 38.5669080572787 Long: -122.793702757944 Datum: NAD 83

Soil Map Unit Name: Felta very gravelly loam, 15 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation no, Soil no, or Hydrology no significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. *Trifolium subterraneum*	19	yes	UPL
2. *Festuca perennis*	17	yes	FAC
3. *Hordeum marinum*	16	no	FAC
4. *Festuca microstachys*	14	no	UPL
5. *Carex tumulicola*	10	no	FACU
6. *Bromus hordeaceus*	8	no	FACU
7. *Hordeum murinum*	2	no	FACU
8. *Medicago polymorpha*	3	no	FACU
Total Cover:	89		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 11 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = 0
FAC species _____	x 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: _____ (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: **002**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-12	**10YR 4/2**	**100**					**silty loam**	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C – Soil Maps

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

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Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.

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Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric Soil List - All Components

Hydric Soil List - All Components–CA097-Sonoma County, California					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
CgC: Clough gravelly loam, 2 to 9 percent slopes	Clough	85	Terraces	No	—
	Positas	8	—	No	—
	Manzanita	7	—	No	—

Data Source Information

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 10, Sep 27, 2016

Soil Map—Sonoma County, California
(Bailhache Ave Soil Map)

Map Scale: 1:865 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 10, Sep 27, 2016

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

Date(s) aerial images were photographed: Aug 14, 2011—Aug 15, 2011

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

Map Unit Legend

Sonoma County, California (CA097)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CgC	Clough gravelly loam, 2 to 9 percent slopes	0.9	100.0%
Totals for Area of Interest		**0.9**	**100.0%**

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

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2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
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   B. Show evidence that the soil meets the definition of a hydric soil;
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Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

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Report—Hydric Soil List - All Components

Hydric Soil List - All Components–CA097-Sonoma County, California					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
FaF: Felta very gravelly loam, 30 to 50 percent slopes	Felta	85	Terraces	No	—
	Laniger	5	—	No	—
	Spreckels	5	—	No	—
	Toomes	5	—	No	—

Data Source Information

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 10, Sep 27, 2016

Soil Map—Sonoma County, California
(Pull Site Soil Map)

Map Scale: 1:864 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

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

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

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

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

Background
- Aerial Photography

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Warning: Soil Map may not be valid at this scale.

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Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 10, Sep 27, 2016

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

Date(s) aerial images were photographed: Aug 14, 2011—Aug 15, 2011

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Map Unit Legend

Sonoma County, California (CA097)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
FaF	Felta very gravelly loam, 30 to 50 percent slopes	1.0	100.0%
Totals for Area of Interest		**1.0**	**100.0%**

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2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

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Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.

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Report—Hydric Soil List - All Components

Hydric Soil List - All Components–CA097-Sonoma County, California					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
FaE: Felta very gravelly loam, 15 to 30 percent slopes	Felta	85	Terraces	No	—
	Guenoc	5	—	No	—
	Spreckels	5	—	No	—
	Toomes	5	—	No	—

Data Source Information

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 10, Sep 27, 2016

Soil Map—Sonoma County, California
(Mt Weske Drive Soil Map)

Map Scale: 1:623 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 10, Sep 27, 2016

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

Date(s) aerial images were photographed: Aug 14, 2011—Aug 15, 2011

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

Map Unit Legend

Sonoma County, California (CA097)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
FaE	Felta very gravelly loam, 15 to 30 percent slopes	1.1	100.0%
Totals for Area of Interest		**1.1**	**100.0%**

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric Soil List - All Components

Hydric Soil List - All Components–CA097-Sonoma County, California					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
FaD: Felta very gravelly loam, 5 to 15 percent slopes	Felta	85	Terraces	No	—
	Unnamed	3	—	No	—
	Guenoc	3	—	No	—
	Laniger	3	—	No	—
	Spreckels	3	—	No	—
	Toomes	3	—	No	—

Data Source Information

Soil Survey Area: Sonoma County, California
Survey Area Data: Version 10, Sep 27, 2016

Soil Map—Sonoma County, California
(Approx New Culvert Location Soil Map)

Map Scale: 1:896 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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Sonoma County, California (CA097)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
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Totals for Area of Interest		**2.3**	**100.0%**