



December 31, 2014

Abigail Fateman
East Contra Costa County
Habitat Conservancy
30 Muir Road
Martinez, Ca 94553

Technical Memorandum: 2014 Wetland Assessment and Mapping of Preserve System Acquisitions, East Contra Costa County Habitat Conservancy, Contra Costa County, California

Dear Ms. Fateman:

The purpose of this technical memorandum is to present the results of wetland assessment and mapping conducted in 2014 on East Contra Costa County Habitat Conservancy (Conservancy) preserve system acquisitions. This memorandum represents the fourth consecutive year Nomad has conducted this effort which began in 2011 (Nomad 2011; 2012, 2013). This year's methodology conforms to the previous years' effort with the exception of riparian mapping which has been modified as described below. The Conservancy is the implementing entity of the East Contra Costa Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP, referred to as "the Plan" hereafter) (Jones & Stokes 2006). The purpose of the Plan is to protect and enhance ecological diversity and function within the rapidly urbanizing region of eastern Contra Costa County.

The Plan describes how to avoid, minimize, and mitigate, to the maximum extent practicable, impacts to wetlands and sensitive communities while allowing for the growth of selected regions of the County. The Plan outlines goals and objectives related to preservation of wetlands (and other aquatic features) and preservation of unique landscape features on acquisitions to the Preserve System. The Plan also describes the responsibilities associated with operating and maintaining the new preserves that will be created to mitigate for the anticipated impacts.

The primary objective of this effort was to ground truth the original land cover map (Jones and Stokes 2006) to ascertain the accuracy of wetland features and streams contained within the Plan. Additional objectives were to ground truth alkali grassland polygons and to map landscape features including culverts, seep/springs, native grassland, and rock outcrops. These mapped land cover features will be used to calculate acreages of wetlands and landscape features preserved, in order to meet goals and objectives outlined in the Plan. These maps and associated geospatial data (GIS shapefiles) will also be used to identify restoration and enhancement opportunities. This letter includes a summary of Plan goals pertaining to wetlands, mapping methodology, results, and recommendations.

PLAN GOALS PERTAINING TO WETLANDS AND UNIQUE LANDSCAPE FEATURES

The Plan contains goals and objectives related to the preservation of wetlands (and other aquatic features) and preservation of unique landscape features on acquisitions to the Preserve System (Jones & Stokes 2006). Outlined below is a summary of the goals and objectives that relate directly to preservation of these features. Additional goals and objectives address covered species and measures to preserve and enhance habitat for these species, which are not listed below. Table 1 summarizes the estimated

acquisition requirements for aquatic land cover types under Maximum Urban Development Area and is taken from Table 5-5b in the Plan.

Goal 1: Preserve wetlands and ponds in the inventory area.

Objective 1.1. Acquire perennial wetlands at a ratio of 1:1 of wetted acres and protect as part of the Preserve System.

Objective 1.2. Acquire seasonal wetlands at a ratio of 3:1 of wetted acres and protect as part of the Preserve System.

Objective 1.3. Acquire alkali wetlands at a ratio of 3:1 of wetted acres and protect as part of the Preserve System in Zones 2, 5, and 6.

Objective 1.4. Acquire ponds at a ratio of 2:1 of wetted acres and protect as part of the Preserve System.

Objective 1.5. Acquire at least 7 of the 13 ponds in Subzone 2c to provide suitable breeding habitat for tri-colored blackbird, California tiger salamander, California red-legged frog, and/or western pond turtle.

Objective 1.6. Acquire slough/channel at a ratio of 0.5:1 of wetted acres and protect as part of the Preserve System.

Objective 1.7. Acquire aquatic (open water) at a ratio of 1:1 of wetted acres and protect as part of the Preserve System.

Objective 1.8. Preserve and maintain contiguous wetland-upland complexes.

Goal 10: Preserve sufficient habitat in the inventory area to maintain viable populations of grassland-dependent covered species.

Objective 10.1. Preserve 13,000 acres of annual grassland and 900 acres of alkali grassland.

Objective 10.2. Protect native grassland alliances within the Preserve System.

Goal 28. Preserve streams and riparian woodland /scrub in the inventory area.

Objective 28.1. Protect a minimum of 5 linear miles of stream to compensate for permanent loss of habitat.

Objective 28.2. Acquire riparian/scrub at a ration of 2:1 and protect as part of the Preserve System.

Table 1. Estimated Acquisition Requirements for Aquatic Land Cover Types under Maximum Urban Development Area

AQUATIC LAND COVER TYPES	ESTIMATED PRESERVATION REQUIREMENT (ACRES)
Riparian woodland/scrub	70
Permanent wetlands	75
Seasonal wetlands	168
Alkali wetland	93
Ponds	16
Slough/channel	36
Aquatic (open water)	12
Perennial streams (miles)	0.8
Intermittent streams (miles)	0.4
Ephemeral streams (miles)	5

Source: Table 5-5b in the Plan (Jones & Stokes 2006)

METHODOLOGY

In 2014 a survey of wetland features was conducted on a single acquisition, the Smith property. Results for the wetland assessment are based strictly on field surveys. Incidental data on uncommon landscape features and uncommon vegetation types were also collected when encountered in the field during wetlands mapping.

Background Aerial Imagery Analysis

Prior to conducting field work, aerial photo imagery and existing GIS datasets were reviewed to determine locations where wetlands were likely to occur based on aerial photo signature, soils or topography.

Field Survey

Nomad senior botanist Heath Bartosh, botanist/wetland specialist Erin McDermott, and botanist Brian Peterson conducted wetland assessment field work on June 24, 25 and July 1, 2014. Field surveys were conducted by driving along access roads and walking to areas inaccessible by vehicles to survey for features that likely qualify as wetland land cover types or targeted landscape features. Once identified these features were then evaluated by species composition and wetland characteristics. All existing wetland features and targeted land cover types were evaluated to verify they were mapped correctly. Wetland features were hand drawn on the field maps. A GPS point was recorded at the location of features that were not clearly visible on the aerial imagery and data was recorded on field data forms (Attachment A). Field surveys were reconnaissance in nature and were not conducted to a level of a formal wetland delineation in accordance with the U.S. Army Corps of Engineers' 1987 and 2008 Guidelines (Environmental Laboratory 1987, U.S. Army Corps of Engineers 2008).

Data Collection

This section details how the Plan defines each aquatic feature/land cover type and what data were collected during the field mapping effort. Definitions of the features are given in the section below.

Wetlands

Wetland mapping errors and omissions were corrected which included locating and mapping additional wetlands and revising the boundaries of inaccurately mapped wetlands to reflect what was on the ground. Wetland features were characterized as one of the following types using definitions as defined in the Plan:

- alkali wetland
- permanent wetland
- pond
- seasonal wetland

Wetlands (alkali, permanent, and seasonal) were identified as depressional or riverine, these terms are defined below.

Streams/Creeks and Riparian

Stream mapping errors and omissions were corrected which included locating and mapping additional streams. Mapped creeks and streams that were previously mapped in the inventory area were identified as either intermittent or ephemeral. In addition, incidental observations of culvert locations were mapped, however not all culverts were mapped. Tree species present along streams were noted and areas with riparian vegetation were mapped. Riparian vegetation as defined by the Plan does not include riparian oak woodland, however oak woodland was mapped as riparian in several locations based on conversations with the Conservancy. Mapping methods for and the definition of riparian oak woodland are provided below under Definitions. No sloughs were present in the survey area.

Uncommon Landscape Features and Uncommon Vegetation Types

Alkali grassland mapping errors and omissions were corrected which included locating and mapping additional alkali grassland and revising inaccurately mapped alkali grassland based primarily on the presence of specific plant species. The following features were mapped when encountered during wetland land cover mapping and were a secondary goal of this project:

Point Features

- springs and seeps
- culverts
- rock outcrops
- native grasslands

Polygon Features

- alkali grassland
- rock outcrops

Definitions

All land cover type definitions followed the descriptions in Section 3.3.2 of the Plan. Further details for select land cover types are given below.

Alkali grassland – Alkali grassland areas were defined as areas that meet the alkali grassland definition in the Plan. As defined by the Plan, “dominant grasses in alkali grassland include saltgrass (*Distichlis spicata*) and wild barley (*Hordeum* spp.). The associated herb cover consists of halpophytes including saltbush (*Atriplex* spp.), alkali heath (*Frankenia salina*), alkali weed (*Cressa truxillensis*), alkali mallow (*Malvella leprosa*), and common spikeweed (*Centromadia pungens*) (Jones & Stokes 2006).” Other field

indicators of alkali grassland on site included visible alkali soils, alkali scalds, and low cover of vegetation.

Alkali wetland – Alkali wetland areas were defined as areas that meet the alkali grassland or alkali wetland definition in the Plan that also contained wetland hydrology. As defined by the Plan, “alkali wetlands support ponded or saturated soil conditions and occur as perennial or seasonally wet features on alkali soils. The vegetation of alkali wetlands is composed of halophytic plant species adapted to both wetland conditions and high salinity levels. Typical species include those common to both seasonal and alkali wetlands such as saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), and common spikeweed (*Centromadia pungens*) (Jones & Stokes 2006).” As defined by the U.S. Army Corps of Engineers (Environmental Laboratory 1987), wetland hydrology is an area that is inundated either permanently or periodically at mean water depths <6.6 ft, or where the soil is saturated to the surface at some time during the growing season of the prevalent vegetation. Wetland hydrology indicators provide evidence that the site has a continuing wetland hydrologic regime. Wetland hydrology indicators include visual observation of inundation, visual observation of saturation, water marks, sediment deposits, surface soil cracks, drainage patterns, drift lines, and oxidized rhizospheres along living roots, in part.

ICF-Jones & Stokes released a memo (2008) clarifying the difference between alkali grassland and alkali wetland for use in land cover mapping. In it they list several species that they consider to be indicative of alkali wetland including cattail (*Typha* spp.), cocklebur (*Xanthium* spp.), rabbit’s foot grass (*Polypogon monspeliensis*), rush (*Juncus* spp.), spikerush (*Eleocharis macrostachya*), stinging nettle (*Urtica dioica*) and tule (*Schoenoplectus acutus* var. *occidentalis*). We agree with the species in this list except cattails and tule, which are not characteristic of alkali wetland, but instead are characteristic of permanent wetland. As a part of this effort we differentiated between alkali grassland and alkali wetland based on the presence of wetland hydrology.

Permanent wetland - All wetlands dominated by emergent perennial wetland species, especially monocots, including cattails (*Typha* spp.) and tules (*Schoenoplectus* spp.) were identified as permanent wetland. These stands of vegetation were mapped when they occurred within ponds as well as in creek channels.

Riverine - Wetlands (alkali, permanent, and seasonal) were identified as depressional or riverine. Wetlands were considered riverine if they were linear and followed an ephemeral or intermittent creek channel. Riverine permanent wetlands generally fill the bottom of the channel and are confined to the channel. Riverine seasonal and alkali wetlands follow stream channels but are wider than the channel in places where channel depth is shallow and water may crest the banks.

Depressional - Wetlands (alkali, permanent, and seasonal) were identified as depressional or riverine. Wetlands were considered depressional if they were not linear, did not follow an ephemeral or intermittent creek channel, or were isolated (off-channel) features.

Intermittent streams – As defined in the Plan (Jones & Stokes 2006), intermittent streams are “streams supplied by both rainfall runoff and groundwater; intermittent streams tend to be seasonal, flowing during the rainy season and into the late spring or early summer.” Streams that had a bed and bank, evidence of scour, and contained some moisture during the spring or summer surveys were mapped as intermittent

Ephemeral streams – As defined in the Plan (Jones & Stokes 2006), ephemeral streams are “streams that only flow in response to rain events and receive no groundwater input.” Streams that had a bed and bank, were not well-scoured, were not fed by springs or seeps, and were dry during the spring surveys were mapped as ephemeral.

Riparian woodland/scrub – As defined in the Plan (Jones & Stokes 2006), riparian vegetation only includes trees such as Fremont cottonwood (*Populus fremontii* subsp. *fremontii*), western sycamore (*Platanus racemosa*), willows (*Salix* spp.), and mule fat (*Baccharis salicifolia*). As per the Plan, oak (*Quercus* sp.), California bay (*Umbellularia californica*), and buckeye (*Aesculus californica*) trees are not considered riparian vegetation, even though they border creeks on acquisition properties such as Barron and Irish Canyon.

Based on discussions with Conservancy staff, oak woodland (which includes oaks, California bay, California buckeye and other native tree species as defined in the Plan) that occurs along streams, was included in the riparian woodland/scrub designation as of 2014. Including oak woodland as riparian land cover is appropriate as it provides ecological functions including regulating stream temperatures and providing important cover, watering, and refugia for wildlife, especially in the east part of the inventory area where there is less tree cover.

Oak woodland was considered to be riparian woodland when it met the following parameters:

- woodlands located on intermittent or perennial streams with significant oak cover;
- the cover comprises primarily of evergreen oak species, valley oak (*Quercus lobata*), or buckeye;
- at least a portion of the tree canopy shades the creek channel;
- at least 150 linear feet of creek is shaded by continuous canopy and no more than 50 feet of grassland or shrubland gaps are present.
- a single tree does not constitute riparian woodland

Mapping

A GIS shapefile of new and revised land cover types was created by interpreting digital color aerial photography and annotated field maps to delineate and improve boundaries around land cover types, through a “heads-up” digitizing process. Boundaries of wetland features were heads-up digitized as polygons at a scale of 1:600. The base imagery used was Contra Costa County’s 2009 and 2014 high resolution imagery. Supplementary imagery used includes 2009 NAIP 1-meter resolution for Contra Costa County and imagery served through Google Earth. Microsoft Bing, and online map servers provided by ESRI’s ArcGIS Online service. A point shapefile was created that contained culverts, springs and seeps, individual or small groups of riparian trees, discrete rock outcrops, and discrete native grassland stands. A polygon shapefile was created that contained wetland features, alkali grassland, and rock outcrops. A polyline shapefile was created that contained intermittent creeks that were not included in the existing HCP creeks shapefile. This polyline shapefile also contained existing creeks classified as intermittent, ephemeral, or perennial. Ephemeral creeks that are not in the existing HCP creeks shapefile were hand drawn on field maps.

The results of mapping on Smith Ranch were compared with the HCP land cover shapefile dated November 2014. The November 2014 HCP land cover shapefile included the results of the 2013 mapping conducted by Nomad Ecology.

RESULTS

The total number of polygons and acreage of each land cover type as a result of the land cover type ground truthing and revision is shown in Table 2. Table 2 also shows the number of polygons and acreage for each land cover type in the existing HCP land cover shapefile (dated November 2014), updated land cover, and the overall net change as a result of this mapping effort. Maps depicting changes in land cover designations of the Smith property in Attachment B

Table 2. 2013 Wetland Assessment Data Summary

LAND COVER TYPES	EXISTING HCP LAND COVER SHAPEFILE		REVISED LAND COVER SHAPEFILE		
	NO. OF POLYGONS	ACREAGE	NO. OF FEATURES	ACREAGE	CHANGE (IN ACRES)
alkali grassland	NA	NA	17	1.82	+1.82
alkali wetland (riverine) ^w	NA	NA	6	1.74	+1.74
alkali wetland (depressional) ^w			0	0	
pond ^w	8	1.30	10	0.93	-0.37*
seasonal wetland (riverine) ^w	1	0.04	2	0.21	+0.17
seasonal wetland (depressional) ^w			0	0	
wetland (no subtype) ^w	1	0.67	0	0	-0.67**
Riparian (riparian oak woodland) ^w	NA	NA	13	10.69	+10.69
All Land Cover Types	10	2.01	48	15.39	+13.38
All wetland ^w types	10	2.01	31	13.57	+11.56

* This reduction in pond acreage is a result of a misidentified pond as oak woodland and overestimated pond boundaries in the original land cover map.

** This reduction is a result of the assignment of the general wetland category to more specific subtypes and uplands.

Wetlands

The overall results of the 2014 wetlands assessment at the Smith property produced a refined land cover map with numerous additional wetland features mapped. The number of wetland features increased from 10 to 31 with an increase of 11.56 acres for a total of 13.57 acres. The initial mapping was based on aerial photo interpretation over the entire inventory area at a coarse scale, which resulted in polygons that were drawn roughly around features. Refinement of the polygons to conform to the exact boundaries of the features, at a finer scale, resulted in small decreases per feature, and a large increase in wetland acres due to the inclusion of riparian oak woodland as a riparian habitat type. Also noteworthy is the occurrence of alkali features that were not previously known from the Smith property.

Alkali Wetland

No alkali wetland was previously mapped on the Smith Ranch. Based on the 2014 survey 6 polygons were mapped totaling 1.74 acres. These were all riverine alkali wetlands located on Briones Creek and characterized by saltgrass in a channel that is supported by wetland hydrology either from an intermittent stream, elevated water table, or seep/spring.

Pond

The number of ponds increased from 8 to 10. One pond from the previous map was removed, as it was misidentified oak savanna, and three ponds were added. Six of the previously mapped ponds were modified to reflect more accurate boundaries. However there was a slight decrease in acreage from 1.30 to 0.93 acres (a decrease of 0.37 acres). This decrease is due to refining of existing pond boundaries using aerial photographs. The high water mark, clearly visible in the field and from the aerial photos, was used to delineate the boundaries of ponds.

Wetland

The only feature previously mapped as uncategorized “wetland” land cover type was reclassified as alkali wetland, alkali grassland, and grassland. This caused the reduction of uncategorized wetland acreage from 0.67 to 0. No new wetland features mapped were classified as general “wetland” as they were all identified to subtype.

Seasonal Wetland

Seasonal wetland acreage increased from 0.04 to 0.21 acres (an increase of 0.17 acres) and the number of features increased from 1 to 2 polygons. The previously mapped seasonal wetland was riverine located along Briones Valley Creek. The additional seasonal wetland mapped in 2014 is a depressional feature likely fed by a seep which supports an abundance of Mexican rush (*Juncus mexicanus*).

Riparian

As detailed above, in prior year’s wetland mapping efforts oak woodland was not considered riparian. In 2014 oak woodland was considered riparian if it met the definition and was therefore included in the Smith property mapping effort. No other subtypes of riparian were observed within the Smith property.

Riparian Oak Woodland

During the 2014 mapping effort a total of 13 polygons of this land cover type were recorded totaling 10.69 acres. These riparian woodlands comprise primarily interior live oak (*Quercus wislizeni* var. *wislizeni*) and California buckeye.

Unique Landscape Features

Alkali Grassland

No alkali grasslands were previously mapped on Smith Ranch. Based on 2014 surveys 17 features polygons totaling 1.82 acres were mapped. Alkali grassland was originally mapped for the Plan using the extent of alkaline soils from the Contra Costa County soil survey (USDA 1977). When conducting ground truthing, we observed previously unmapped alkali grassland in narrow corridors along the banks of Briones Creek, with the exception of one alkali grassland feature not associated with a creek. Due to the lack of strong alkaline soils on Smith property the mapped alkali grasslands are likely supported by groundwater with an elevated pH.

Scalds

Though alkali habitat was found, no alkali scalds were observed during 2014 surveys.

Native Grassland

Native grassland stands were mapped when they were encountered during the wetland mapping field work. During the 2014 assessment one data point was collected representing a small patch of Native Grassland classified as valley needlegrass (*Stipa pulchra*) grassland.

Seeps/Springs

Seeps and springs were mapped when they were encountered during the wetland mapping field work. Only three seeps/springs were mapped as point features in the 2014 assessment of Smith property. Because the survey area was not systematically surveyed for seeps/springs, there are likely additional seeps present on the surveyed parcels.

Rock Outcrops

Large rock outcrops were mapped from field assessment or aerial photo interpretation. Small rock outcrops are represented with points whereas larger outcrops are delineated as polygons. In total 13 points and 17 polygon features were mapped. The total area of mapped rock outcrop polygon features is 3.2 acre.

SUMMARY

The results of the 2014 wetlands assessment have added to the acreage preserved based on HCP conservation goals for wetlands within the inventory area. Table 3 summarizes the estimated preservation acreage required for aquatic land cover types and alkali grassland as outlined in Table 5-5b of the Plan (which is based on the Maximum Urban Development Area) and in the objectives of the Plan. Based on the estimated preservation requirements in the Plan, additional acreage is needed for all aquatic land cover types and alkali grassland.

Table 3. Wetland Preservation Requirement Status

SELECT LAND COVER TYPES	ESTIMATED PRESERVATION REQUIREMENT (ACRES)	ACQUISITION PROPERTIES PRESERVATION TOTAL ¹ (ACRES)	ESTIMATED ACREAGE NEEDED	SUGGESTED ADDITIONAL ACQUISITION PROPERTY TARGETS
Permanent wetland	75	11 ²	64	Low fields east of Brentwood, Oakley, and Knightsen
Seasonal wetland	168	21 ²	147	Lone Tree Valley, Horse Valley, Deer Valley and parts of Briones Valley
Alkali wetland	93	37 ²	56	Areas south of Discovery Bay and east of Byron Highway; around Knightsen.
Ponds	16	14	2	-----
Alkali Grassland	900	240	660	Areas south of Discovery Bay and east of Byron Highway, around Knightsen.
Riparian woodland/scrub	70	32 ³	38	Corridors along Marsh Creek, upstream from Round Valley

¹For all Acquisition Properties included in the Conservancy shapefile (dated November 2014) and calculated using the HCP Land Cover shapefile (dated January 2014) and updated with 2013 revisions.

²Includes riverine and depressional features.

³Acreage added from Smith Ranch (10.56 acres) is Oak Woodland Riparian.

RECOMMENDATIONS

We recommend continuing to assess and map wetland features on new and unsurveyed acquisition properties in 2015 using the same methodology.

Sincerely,



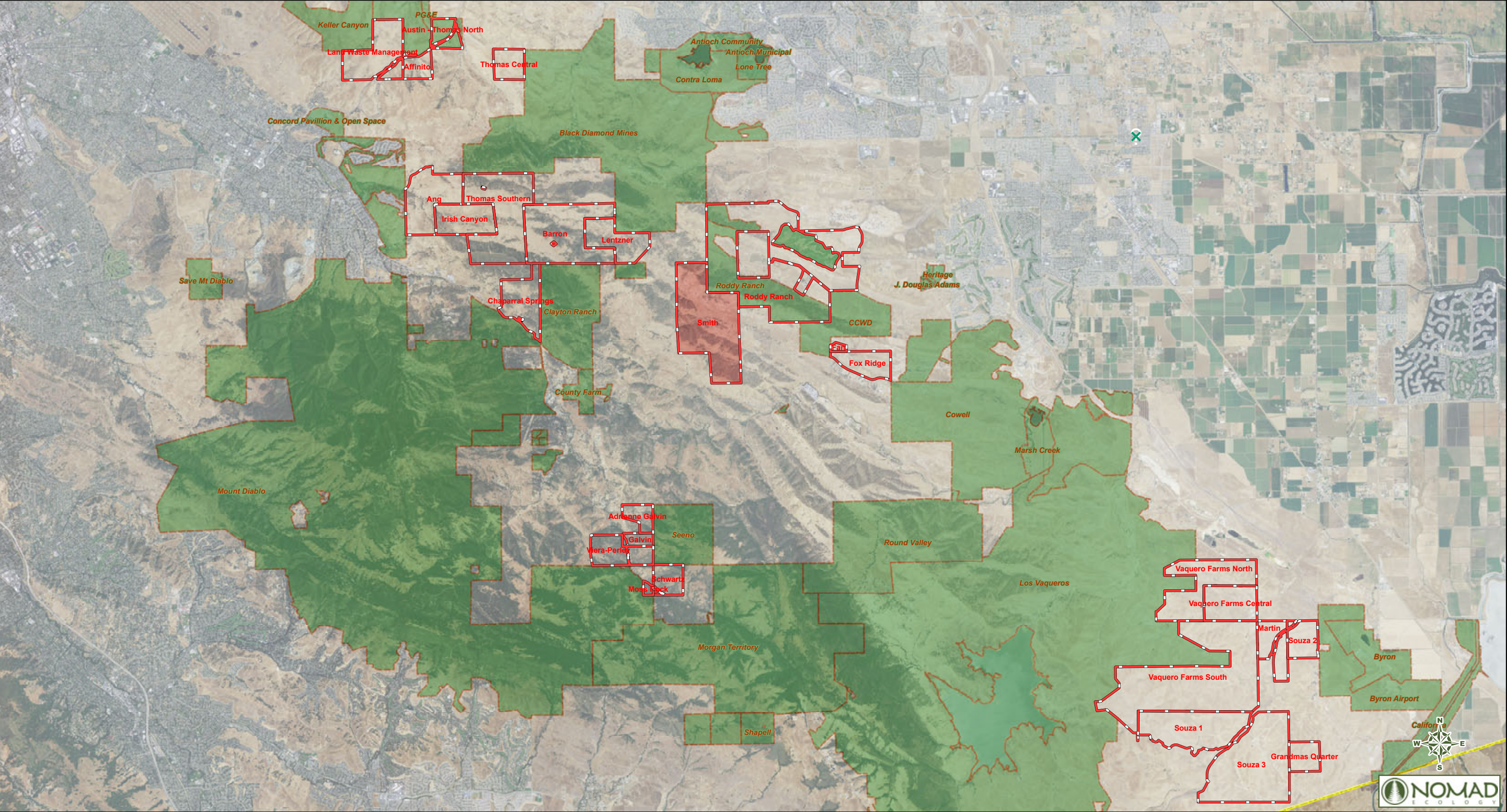
Heath A. Bartosh
Principal
Senior Botanist & Rare Plant Specialist
Nomad Ecology

REFERENCES

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- U.S. Department of Agriculture (USDA). 1977. *Soil Survey of Contra Costa County*. Natural Resources Conservation Service

ATTACHMENTS

- Attachment A: Blank Field Data Form
- Attachment B: Mapped Features (6 Sheets)



December 2014 2014 Wetland Assessment

Legend

Acquisition Parcels

Parcels Surveyed in 2014

Public Land and Easements

County Boundaries

Attachment A

Preserve Acquisitions

Surveyed in 2014

Acquisition Wetland Assessment

East Contra Costa County

Habitat Conservancy

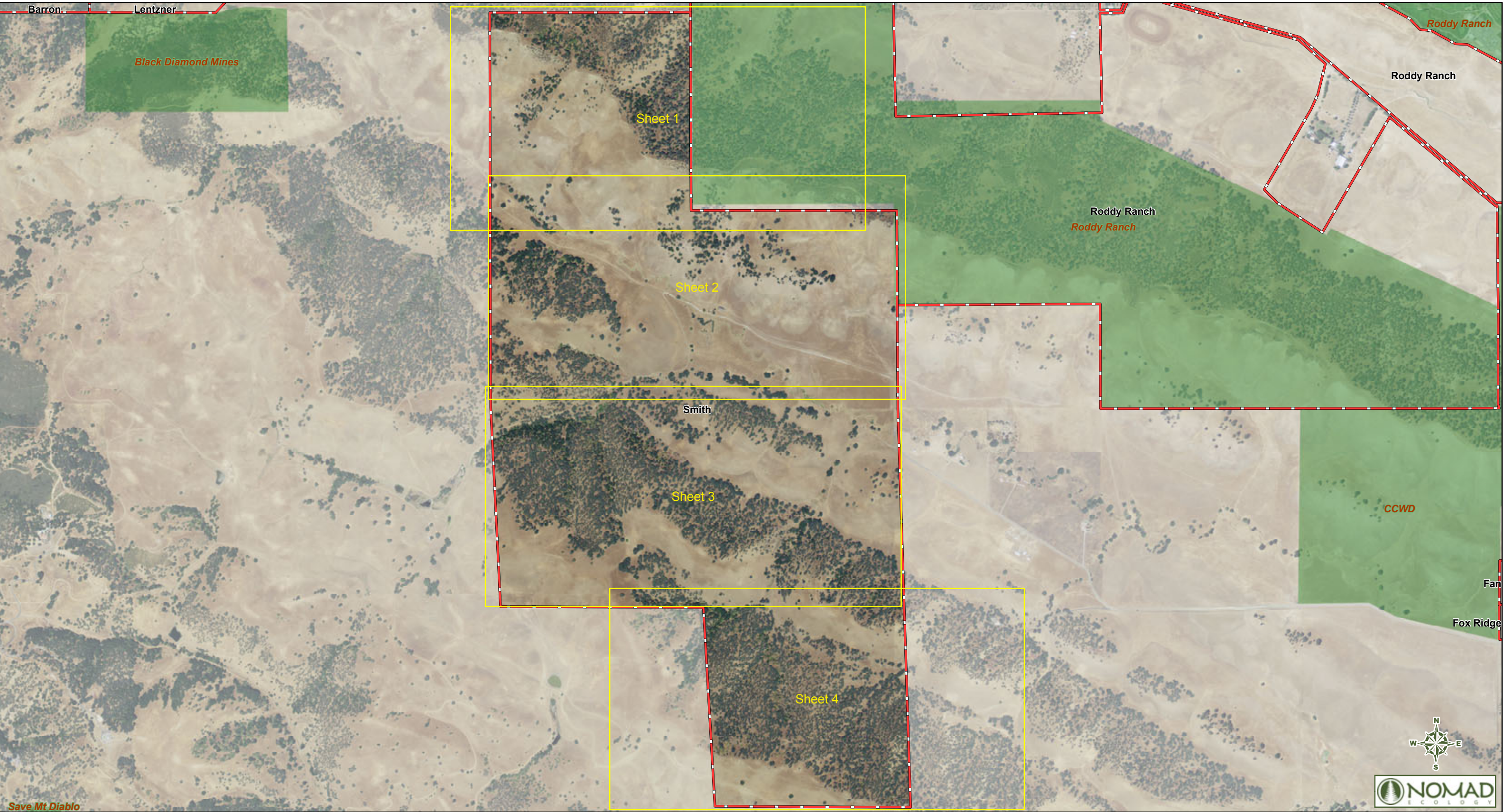


East Contra Costa County
Habitat Conservancy

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December 2014 2014 Wetland Assessment


Legend

 Acquisition Parcels

 Public Land and Easements

 Sheet Index

2013 Wetland Assessment Results

 Creeks

Attachment A
Wetlands Observed
on the Smith Property
East Contra Costa County
Habitat Conservancy



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December 20142014 Wetland Assessment

Acquisition Parcels

Public Land and Easements

2014 Wetland Assessment Reults

Creeks

Culvert

Desert Olive

Native Grassland

Red Willow

Rock Outcrop

Spring/Seep

Trough

Alkali Grassland

Alkali Wetland

Pond

Riparian

Rock Outcrop

Seasonal Wetland

Attachment A
Results of 2014 Wetland Mapping
on the Smith Property
East Contra Costa County
Habitat Conservancy

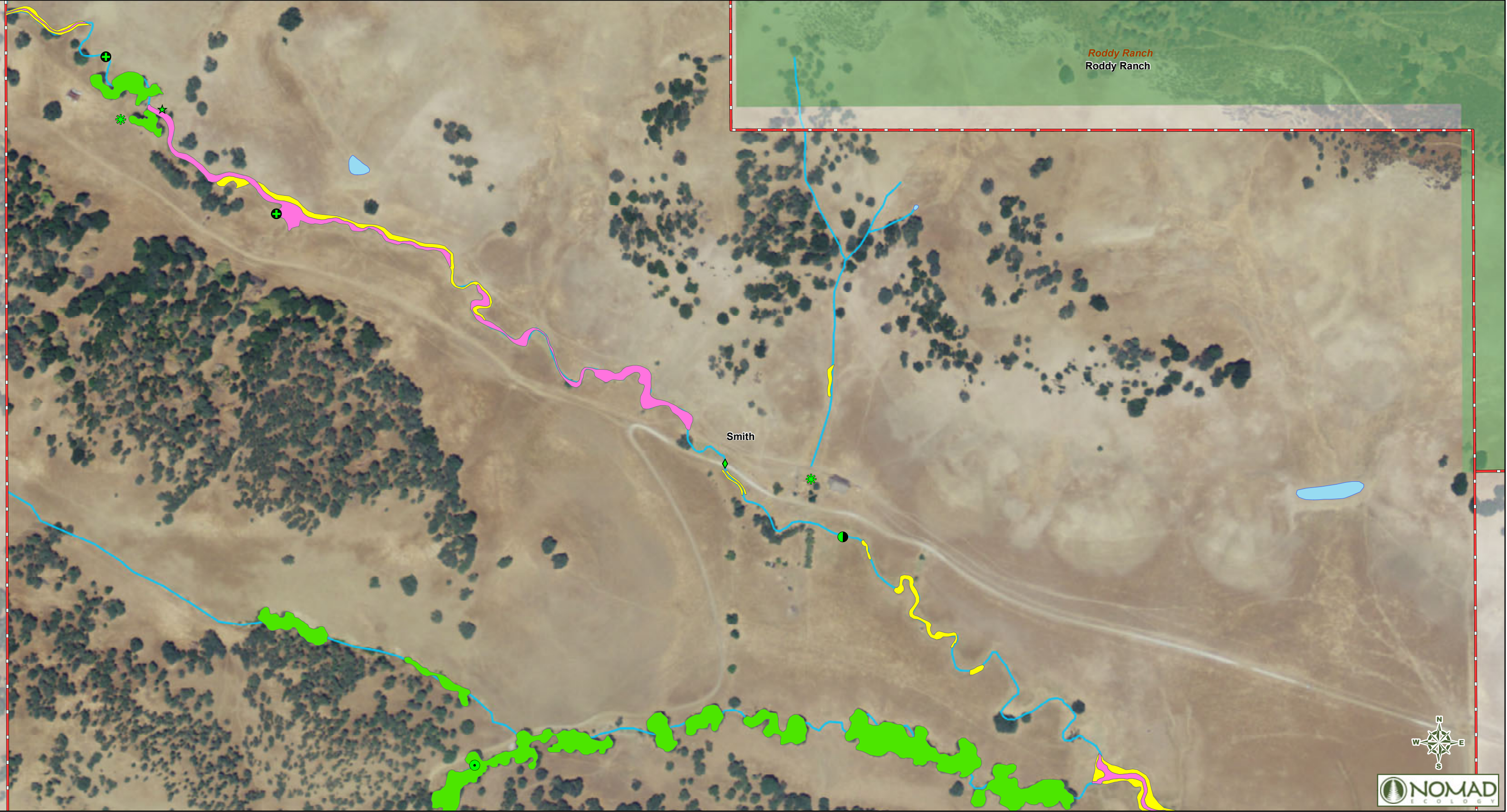


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Sheet 1 of 4





December 2014 2014 Wetland Assessment


 Acquisition Parcels


 Public Land and Easements


2014 Wetland Assessment Results


 Creeks


 Culvert


 Desert Olive


 Native Grassland


 Red Willow


 Rock Outcrop


 Spring/Seep


 Trough


 Alkali Grassland

 Alkali Wetland

 Pond

 Riparian

 Rock Outcrop

 Seasonal Wetland

Attachment A
Results of 2014 Wetland Mapping
on the Smith Property
East Contra Costa County
Habitat Conservancy

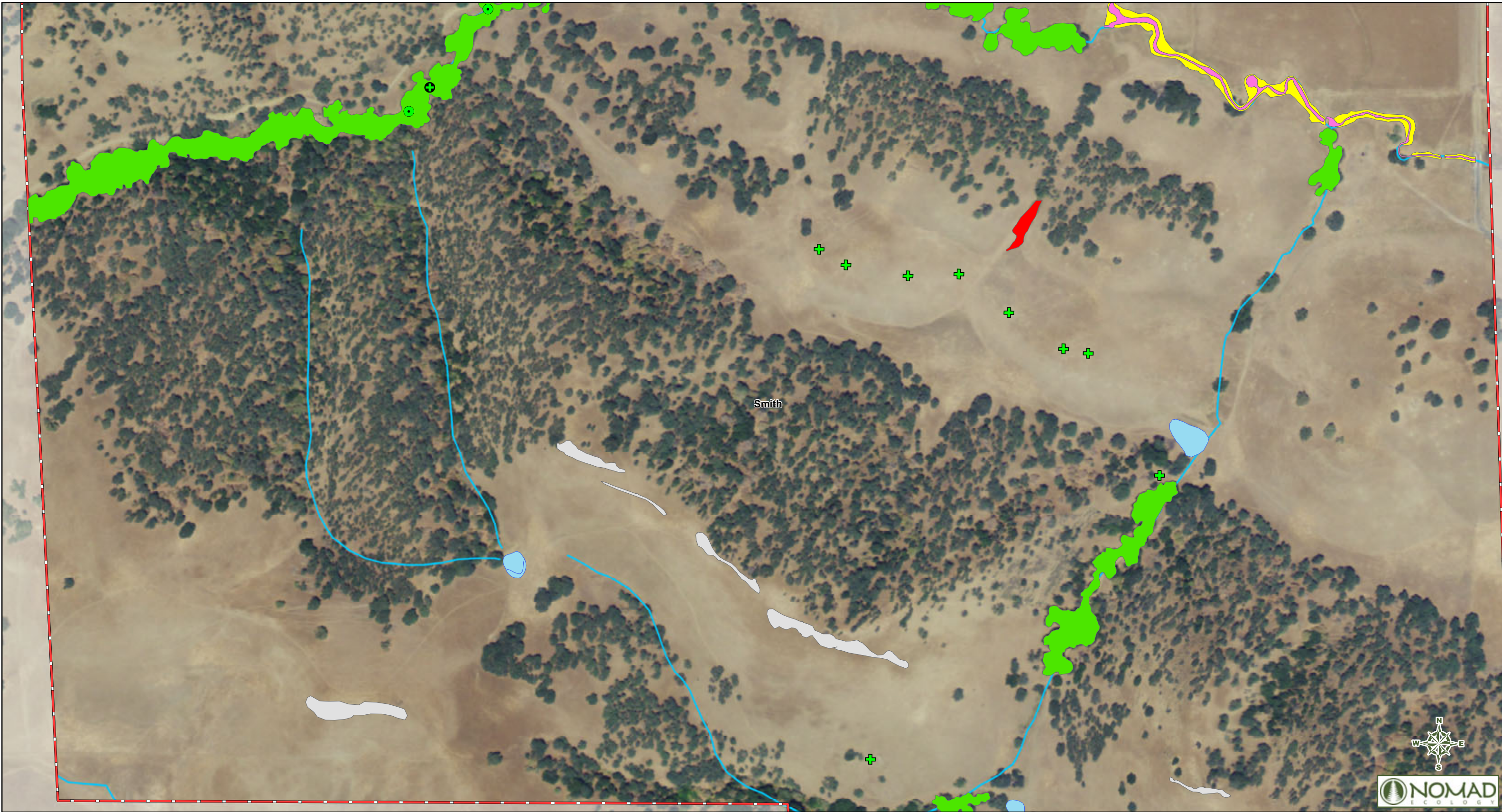
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Sheet 2 of 4

Sources: NAIP 2009; Contra Costa County Projection: NAD 83 UTM Zone 10 North. Contra Costa County, California



December 2014 2014 Wetland Assessment

Legend				
Acquisition Parcels	2014 Wetland Assessment Results	Red Willow	Alkali Grassland	
Public Land and Easements	Creeks	Rock Outcrop	Alkali Wetland	
	Culvert	Spring/Seep	Pond	
	Desert Olive	Trough	Riparian	
	Native Grassland		Rock Outcrop	
			Seasonal Wetland	

Attachment A
Results of 2014 Wetland Mapping
on the Smith Property
East Contra Costa County
Habitat Conservancy



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Sheet 3 of 4



December 2014

2014 Wetland Assessment

Acquisition Parcels

Public Land and Easements

2014 Wetland Assessment Results

Creeks

Culvert

Desert Olive

Native Grassland

Legend

Red Willow

Rock Outcrop

Spring/Seep

Trough

Alkali Grassland

Alkali Wetland

Pond

Riparian

Rock Outcrop

Seasonal Wetland

Attachment A
Results of 2014 Wetland Mapping
on the Smith Property
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Sheet 4 of 4