Chapter 2. Study Methods

2.1. Studies Required

2.1.1 Waters of the United States

Surveys conducted for the proposed project, included a delineation of waters of the United States by Gallaway Consulting, Inc. along SR 32 within the ESL. Prior to field investigation, personnel reviewed aerial photographs, topographic maps, and soil survey data. The field survey was performed on April 14 and 19, 2004 by Mary Bailey, consulting botanist, and Lyna Black, environmental scientist. During the design process a section of SR 32 was added to the eastern most end of the project; the delineation of waters in this section was performed on September 19, 2005 by Christy Dawson, biologist, and Shirley Innecken, botanist. The surveys involved an examination of botanical resources, soils, hydrological features, and determination of wetland characteristics based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987).

The COE and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into jurisdictional waters of the United States, under Section 404 of the Clean Water Act. The term "waters of the United States" is an encompassing term and includes "wetlands" and "other waters." Wetlands have been defined for regulatory purposes as follows: "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." Other waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (i.e. hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

Determination of Hydrophytic Vegetation

The presence of hydrophytic vegetation was determined using the methods outlined in the COE 1989 manual (*Federal Interagency Committee for Wetland Delineation 1989*), a method approved by the COE for use in conjunction with the 1987 manual. Under this method, areas are considered to have positive indicators of hydrophytic vegetation if 50% or more of the dominant plant species are present (defined as plants that comprise 20% or more of the cover value observed at a site include FAC, FACW, or OBL species (Reed 1988)).

Determination of Hydric Soils

Soil survey information was reviewed for the site and representatives from Natural

Resources Conservation Service (NRCS) in Chico, California were consulted on the local soil conditions. Field samples were evaluated using the Munsell soil color chart, hand texturing, and assessment of soil features (e.g. oxidized root channels, evidence of hardpan, Mn and Fe concretions).

Determination of Wetland Hydrology

Wetland hydrology was determined to be present if a site supported one or more of the following characteristics:

- Landscape position and surface topography (e.g., position of the site relative to an up-slope water source, location within a distinct wetland drainage pattern, and concave surface topography),
- Inundation or saturation for a long duration either inferred based on field indicators or observed during repeated site visits, and
- Residual evidence of ponding or flooding resulting in field indicators such as scour marks, sediment deposits, algal matting, and drift lines.

The presence of water or saturated soil for approximately 5 to 12.5 percent of the growing season typically creates anaerobic conditions in the soil, and these conditions affect the types of plants that can grow and the types of soils that develop (Wetland Training Institute 1995).

2.1.2 Biological and Botanical Resources

A biological resource assessment and biological assessment within the ESL, including protocol level surveys for BCM, were performed by Gallaway Consulting, Inc. during the appropriate survey windows in 2004 and 2005. The following protocols were employed during field surveys:

- Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered plants and Natural Communities, Department of Fish and Game, December 9, 1983 (Revised May 8, 2000);

- Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants, USFWS, January 2000;

- Mitigation Guidelines Regarding Impacts to Rare, Threatened, and Endangered Plants, California Native Plant Society Rare Plant Scientific Advisory Committee, February 1991 (Revised April 1998);

Prior to conducting on-site surveys, a list of potentially occurring special-status wildlife and plant species occurring within the ESL was created by accessing all pertinent databases, and contacting appropriate state and federal agencies. Topographic maps and aerial photos of the site were reviewed and areas of potential impact noted. Gallway Consulting, Inc. then reviewed and edited the lists taking into account existing conditions present within the ESL. A complete list of all botanical

resources identified within the ESL is included in **Appendix A**. The CNDDB, California Native Plant Society (CNPS) and USFWS species lists are presented in **Appendix B**. For the purposes of this survey, special-status species are those that fall into one of the following categories (**Figure 3**):

- Designated as rare, threatened, or endangered by State or Federal governments (ESA, 50 CFR 17.12 for listed plants and various notices in the Federal Register, California Endangered Species Act (CESA), 14 CCR 670.5);
- Proposed for rare, threatened, or endangered designation by State or Federal governments;
- Designated as a Species of Concern and/or Species of Special Concern by State or Federal governments;
- Included on the CNPS List as 1A, 1B, and 2 (Skinner and Pavlik, 2003);
- Plants and wildlife that meet the definitions of rare or endangered species under the California Environment Quality Act (CEQA) (state CEQA Guidelines, Section 15380)

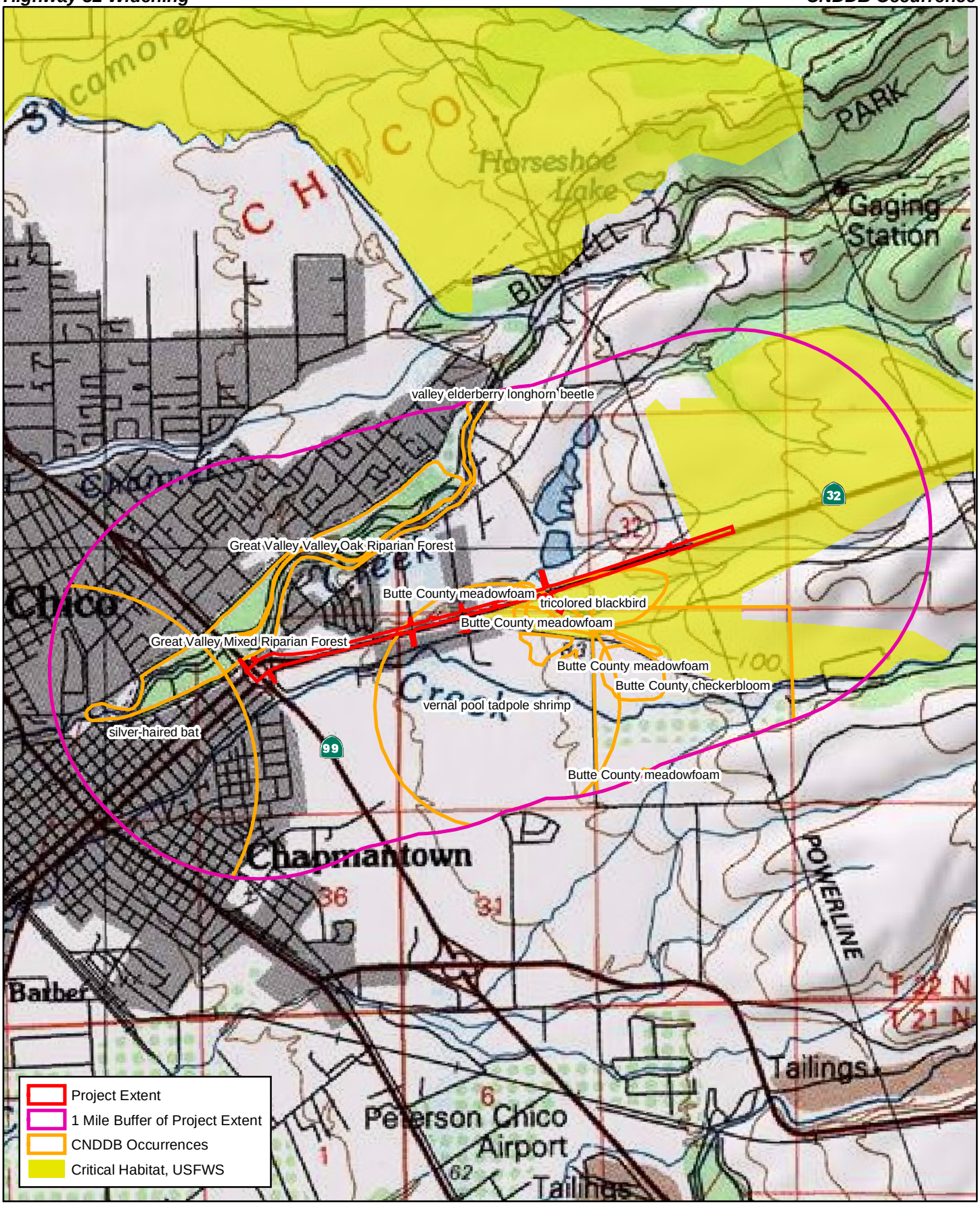
2.1.3 Native Trees

The tree survey within the SR 32 proposed ESL was conducted by Gallaway Consulting, Inc. and was performed by Ryan Brown (WE-7377A) ISA Certified Arborist. The surveys were conducted on October 31, November 8, 18, 21, and 23, 2005. The Arborist recorded native oak trees (i.e., valley oak and live oak) occurring in the survey area that were greater than 2 inches in diameter at breast height (DBH) (with the presumption they will be 4" DBH by construction), and recorded all other tree species 4 inches or greater in DBH as required by Caltrans guidelines. Caltrans considers any species 4 inches or greater in DBH a tree, whereas the City of Chico requires any tree 6 inches or greater be catalogued in pre-construction surveys. For every tree cataloged during the survey, a measurement of DBH was taken, a health score was prescribed, a canopy cover area was estimated, and the location of the tree was logged into a handheld Trimble GeoXT Unit. All accessible trees cataloged were tagged with a 1" X 4" aluminum tag. Each tag included tree number and species. Inaccessible trees were not tagged, but given a number. All data collected from inaccessible trees are estimates.

2.1.4 Sensitive Natural Communities

Under CEQA, a project that substantially adversely affects any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFG or USFWS, will have an impact on the environment. For this assessment, the term "sensitive natural community" includes those communities that, if eliminated or substantially degraded, will sustain a significant adverse impact as defined under CEQA. The CDFG-identified sensitive natural communities

Highway 32 Widening **CNDDB Occurrence**



CNDDB Occurrence provided by CDFG (Sept. 5, 2006).
Critical Habitat provided by USFWS (2005).
Map Date: Aug. 10, 2006.

0 0.25 0.5 Miles

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Figure 3.

in the Sacramento Valley include, but are not limited to, Great Valley Oak Riparian Forest, Great Valley Cottonwood Riparian Forest, Great Valley Mixed Riparian Forest, Great Valley Willow Scrub and California valley oak woodland. These community-types are important as further degradation and destruction threatens populations of dependent plant and wildlife species and significantly reduces their regional distribution and viability.

2.2 Personnel and Survey Dates

The delineation of waters of the U.S. and biological studies were conducted within the ESL by Gallaway Consulting, Inc. and were performed on April 14 and 19, 2004 by Mary Bailey, consulting botanist, and Lyna Black, environmental scientist and on September 19, 2005 by Christy Dawson biologist and Shirley Innecken, botanist. Pedestrian botanical surveys were conducted on April 14 and 19, and July 21, 2004 by Mary Bailey and Shirley Innecken. Additional surveys were conducted in March 2005 by Mary Bailey, and Shirley Innecken to meet the USFWS requirement for two years of BCM surveys as well as re-assessing the ESL for any new special-status species. Surveyor qualifications are available in **Appendix C**.

2.3 Agency Coordination and Professional Contacts

The USFWS was contacted August 3, 2006 for documentation regarding a list of special-status species likely to occur within the USGS quadrangle on which the project occurs. A formal delineation of waters of the United States was completed by Gallaway Consulting, Inc. verified (#200501152) by the COE December 30, 2005 (**Appendix D**).

Preliminary contact with Rick Kuyper, USFWS (June 7, 2005), Howard Brown, (National Oceanic and Atmospheric Administration Fisheries [NOAA]) (December 9, 2004), and Paul Ward, Senior Fisheries Biologist, CDFG (December 28, 2004) was established to determine habitat suitability and potential impacts to listed species, establish construction windows, discuss mitigation options, and review alternatives. On June 23, 2005 representatives from Gallaway Consulting, Inc. and Rick Kuyper, USFWS, visited the site to review alternatives, discuss mitigation options, and provide input on the project. In addition, multiple discussions via phone and email were conducted to further discuss environmental impacts and mitigation options.

2.4 Limitations That May Influence Results

There were no limiting influences. All surveys were conducted during appropriate seasonal windows. The entire project extent was accessible by foot or vehicle (**Figure 2**). Additional data was collected when feasible for areas outside of the project extent, but within the ESL. Standard protocols were used to conduct all surveys.

2.5 Additional Data Sources Consulted for Adjacent Properties

In order to assess all direct and indirect effects associated with the project, additional data sources were consulted for properties that occur adjacent to the ESL. Only parcels with the potential to support special-status or wetlands were examined.

The biological and physical data for parcels between El Monte Avenue and Yosemite Drive have been gathered from many sources. Below is a list of the parcels, their location, surveys conducted and dates. For clarity, the parcels have been numbered (1-9) (**Figure 4**).

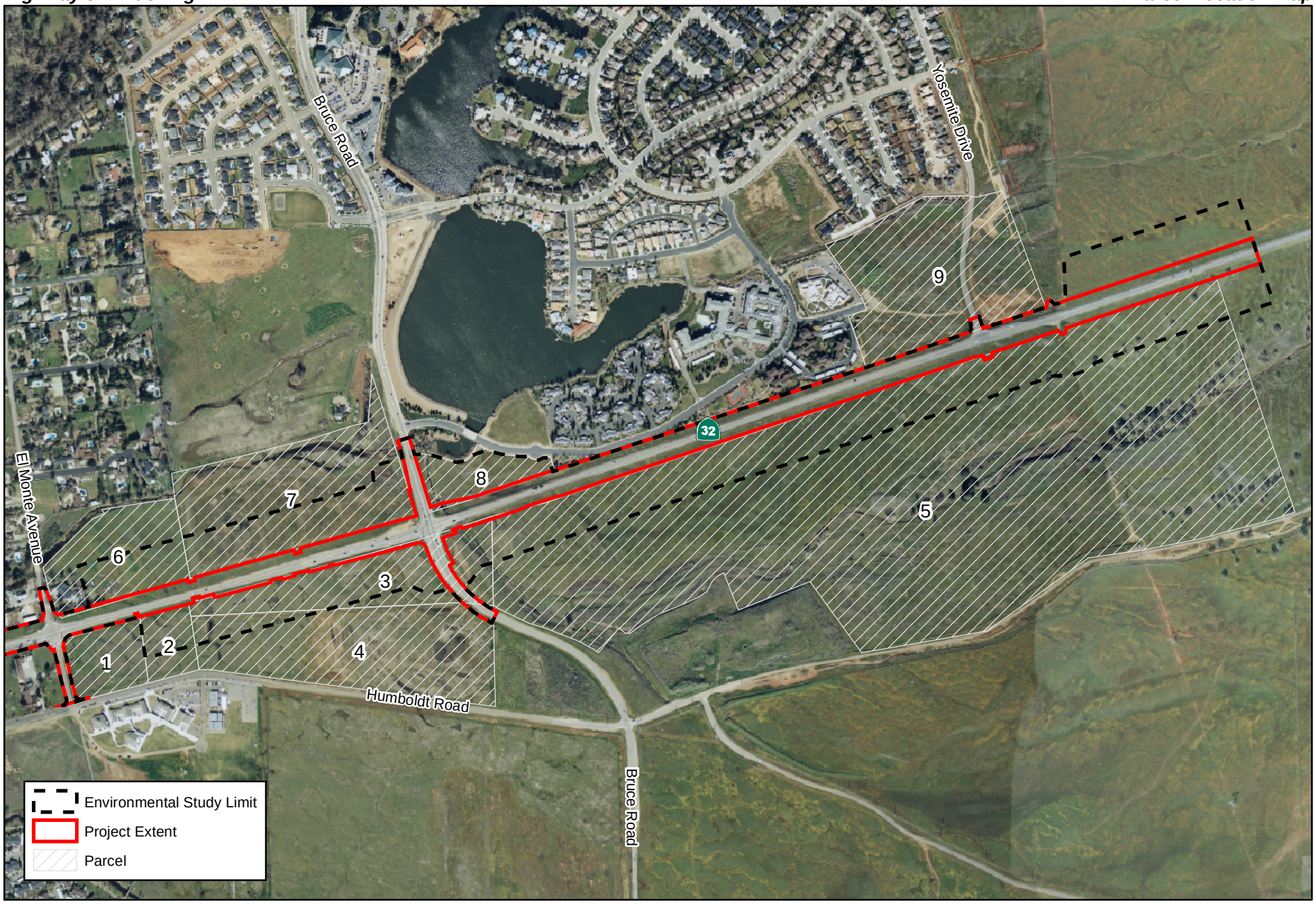
Parcel 1 Don Mulkey Property – Located East of El Monte Road between SR 32 and Humboldt Road. Botanical survey performed by Kingsley R. Stern titled *Survey for Sensitive Species of Vascular Plants, Don Mulkey Property, Located Between Humboldt Road and Highway 32, East of El Monte Avenue, Chico, Butte County, California.* The botanical survey was conducted on 12 and 13 April 1994. Delineation of waters of the U.S. performed by Lisa R. Stallings and Rod Macdonald of Kelley & Associates Environmental Sciences, Inc, (K&AES) titled *Chico Wetlands Delineation, Mulkey Property Highway 32 and Humboldt Road, Butte County, California,* in August 1994 (APN:002-050-059 & 254). The land in Parcel 1 is currently under development (**Figure 4**).

Parcel 2 Don Mulkey Property – Located east of parcel 1 between SR32 and Humboldt Road. Surveys in this parcel are the same is in parcel 1. There are no plans for development due to the presence of BCM (**Figure 4**).

Parcel 3 Fran Shelton – This is a wedge shaped parcel east of parcel 2, and contains portions of Bruce Road and South Fork Dead Horse Slough (**Figure 4**). Vernal pool species have the potential to occur, protocol level invertebrate surveys have not been conducted in this area. Federal and state endangered BCM does occur on-site (**Figure 4**). Foothill Associates, Inc provided mapping data for this parcel.

Parcel 4 Pleasant Valley Assembly of God – A wedge shaped parcel located south of parcel 3, and north of Humboldt road (**Figure 4**). Surveys for BCM were conducted by Shirley Innecken, and Mary Bailey, botanists, during the appropriate survey window on March 11, and 14 of 2005 (*Biological Assessment for the Proposed Meriam Park Development, City of Chico, Butte County, CA, August 2005)*; surveys conducted in March 2004 were performed by Foothill and Associates and Jones and Stokes as a double blind study. Ken Whitney, with Sugnet and Associates, submitted a delineation of waters of the U.S. for verification to the COE in February 1994. In November 1994, the COE initiated Section 7 consultation with the USFWS and on July 10, 1996 the USFWS issued a Biological Opinion (BO, 1-1-95-F-9) addressing project related effects on vernal pool invertebrates and BCM. The land in parcel 4 is a proposed preserve that will be held in a conservation easement, designed with the avoidance of wetland habitats and special-status species in mind.

Highway 32 Widening ***Parcel Location Map***



ESL derived from MTCO AutoCAD, Butte County
parcel right of way & proposed avoidance.
Parcel Data provided by Upstate Planning (July 2005).
Date of Aerial: Feb. 2002 (BCAG)/Map Date: Aug. 1, 2006.
Revised: Nov. 15, 2006.

0 400 800 Feet

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Figure 4.

Parcel 5 Oak Valley – The Oak Valley residential development site is located south of State Road 32 and east of Bruce Road and parcel 3 (**Figure 4**). South Fork Dead Horse Slough runs across the western and southern edges of the parcel. The former "Humboldt Road Burn Dump" was located in the southwestern portion of parcel 5. Below is a list of studies performed on-site as listed in the *Humboldt Road Burn Dump Remediation Project Biological Assessment* Dated July 29. 2004.

- An Initial Study/Mitigated Negative Declaration (IS/MND), titled *Initial Study/Mitigated Negative Declaration for the Humboldt Road Burn Dump Remediation Project. City of Chico, 2004.*

- A delineation of waters of the U.S. and an assessment of the potential for BCM, titled, *Wetland Delineation for the Humboldt Road Burn Dump Remediation Project. City of Chico.* March 24, 2004.

- A delineation of waters of the U.S. was performed for the Oak Valley project, titled, *Wetland Delineation for the Oak Valley Project East, 1995.*

- Special-status species surveys for the California Park South project, titled, *Final Report: California Park South, Chico: Evaluation of Natural Habitats, Wildlife and Sensitive-Species, 1995*.

- Biological surveys were conducted June 15, 19, and 30, 2004, for the Biological Assessment titled, *Biological Assessment, Humboldt Road Burn Dump Remediation Project.*

- Another BA was performed on the portions of the parcel not covered by the Burn Dump Biological Assessment. BCM surveys were conducted March 24 and 26, 2004; valley elderberry longhorn beetle (VELB) surveys were conducted March 24, and May 7, 2004.

- Elderberry shrub, wildlife, plant, and BCM surveys; as well as a jurisdictional delineation of waters of the U.S. were conducted during the winter and spring of 2002.

- A Butte County checkerbloom, BCM, general plant and wildlife surveys, and a delineation of waters of the U.S. were conducted during the spring of 1997.

Parcel 6 – Parcel 6 is located north of State Route 32 directly across from parcel 2 (**Figure 4**). There is no data available at this time for Parcel 6.

Parcel 7 Creekside Apartments – Parcel 7 is located to the north side of State Route 32 between parcel 6 and Bruce Road (**Figure 4**). David Kelley, plant and soil scientist conducted delineation of waters of the U.S. in 1990 and 1999. David Kelley conducted field surveys of parcel 7: however, the data is not available at this time. Parcel 7 is the future location of Creekside Apartments.

Parcel 8 - Parcel 8 is located north of State Route 32 between Bruce Road and California Park residential development. There is no data available at this time for Parcel 8.

Parcel 9 – Parcel 9 is located on the north side of State Route 32 east of California Park, it encompasses Yosemite Drive to the end of the assessment area. The land within parcel 9 is currently being developed; therefore, biological concerns have already been addressed.