SACRAMENTO MUNICIPAL UTILITY DISTRICT
UPPER AMERICAN RIVER PROJECT
(FERC NO. 2101)

WILLOW FLYCATCHER NESTING HABITAT TECHNICAL REPORT

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6.13 Willow Flycatcher Nesting Habitat Study Plan

6.13.1 Pertinent Issue Questions

The willow flycatcher nesting habitat study addresses Terrestrial Resource Issue Questions:

7(b). "What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are these factors influenced by Project operation and maintenance?"

21. "What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-influenced recreation?"

24. "To what extent do Project operations and maintenance activities and Project-induced recreation affect willow flycatcher populations?"

6.13.2 Background

The willow flycatcher (WIFL) has the following special status designations: Federal Species of Concern, California Endangered, Forest Service Sensitive, and Forest Service Management Indicator Species. Historically, the WIFL nested throughout California wherever thickets of riparian deciduous shrubs, primarily willow (*Salix* spp.) occurred (Grinnell and Miller 1944). In the Sierra Nevada, the WIFL historically occurred most commonly from the foothills up to about 6,000 feet elevation, but numerous records also exist from above 6,000 feet (USDA 2001). In the last four decades, breeding populations have been extirpated from most of the lower elevation riparian areas in California. It appears that the species no longer breeds at elevations below 3,000 feet in the Sierra Nevada, and populations above 3,000 feet have declined as well. Current estimates of the WIFL on Sierra Nevada national forests range between 300 to 400 individuals. As a result, the species is recognized by the U.S. Department of Agriculture, Forest Service (USFS) as the highest-priority landbird species in the Sierra Nevada bioregion because it is considered to have the highest probability of being extirpated from the bioregion in the near future (USDA 2001). Factors implicated in the early decline of the WIFL in the Sierra Nevada include livestock grazing, mining, water diversions, and logging during the late 1800s, which affected the hydrology and vegetation of meadows and riparian areas. More recent declines are attributed to wintering ground deforestation, increased human development in the Sierra Nevada, pesticides, recreation, effects on aquatic larvae of invertebrate prey due to stream impacts, and perhaps most importantly, nest parasitism by the brown-headed cowbird (USDA 2001). Within the Sierra Nevada, cowbirds associate with pack stations, corrals, supplemental feed, livestock holding facilities, campgrounds, picnic areas, and rural communities. Cowbirds may also be attracted to Project-associated areas (e.g., facilities, campgrounds, dispersed recreation sites) in the vicinity of potential WIFL nesting habitat that are subject to high levels of human activity.

Three WIFL subspecies breed in California, *Empidonax traillii adastus*, *E.t. brewsteri*, and *E.t. extimus*. Of these three subspecies, only the range of *E.t. brewsteri* includes the Project area. It breeds in shrubby vegetation (specifically willows) in meadow and riparian communities. The shrub layer is typically 6.5 to 13 feet in height, with the lower 6.5 feet comprised of dense woody vegetation. The mean shrub cover within the WIFL territories has been documented at 21,529 square feet (0.5 acres), but in some cases as they have used as little as 1,076 square feet (0.02 acres) of shrub cover for nesting. Meadows used for nesting range in size from 1 to 716 acres, with a mean of 80 acres (USDA 2001). Recent surveys indicate that the species occurs at elevations from 1,200 to 9,500 feet, although most of the known nest sites are between 4,000 and 8,000 feet. There is usually some surface water or saturated soil within defended territories during the early part of the nesting season (Valentine 1987).

In the Sierra Nevada, the WIFL breeding season occurs from late May or early June (territory establishment) to the middle of September (fledgling independence). Most young fledge between approximately July 15 and August 31 and fledglings remain in the territory for 2 to three weeks post-fledging. WIFLs feed primarily on insects, many of which have aquatic larval stages.

No active nest territories are known from the vicinity of the Project. However, the Eldorado National Forest (ENF) has delineated several areas offering potential habitat including several sites near Project features. These sites include meadow complexes around Rubicon Reservoir, upper Gerle Creek, upper Rubicon River, upper Silver

Creek, and Bosworth Meadows near the southeast corner of Union Valley Reservoir. Potential WIFL habitat, as defined by the Sierra Nevada Forest Plan Amendment (USDA 2001), includes: 1) occupied habitat; 2) known WIFL sites; and 3) emphasis habitat (i.e., meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component). Occupied habitats are meadows or riparian sites with documented WIFL occupancy, unless: 1) multiple surveys, completed to protocol, document a lack of occupancy, 2) all documented occurrences are outside the regional survey protocol for determining WIFL occupancy during the breeding season, or 3) habitat type conversion has occurred.

6.13.3 Study Objectives

The objective of this study is to determine if Project-related areas of concentrated human activity (i.e., facilities, campgrounds, high-use dispersed recreation sites) are located near potential WIFL nesting habitat and, if so, determine if these areas are being used by WIFLs and if they are attracting brown-headed cowbirds that may parasitize flycatcher nests. This information will be evaluated to determine if Project activities can and should be modified to limit cowbird occurrence and to direct ENF's habitat management strategies for the WIFL.

6.13.4 Study Area and Sampling Sites

The study area will be all Project-related facilities and recreation sites that occur within 0.5-mile of potential WIFL nesting habitat. This nesting habitat is defined by the Sierra Nevada Forest Plan Amendment (USDA 2001) as follows: 1) occupied habitat; 2) known WIFL sites; 3) emphasis habitat (i.e., meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component); and 4) other suitable habitat as determined by Licensee in collaboration with agency personnel. Occupied habitats are meadows or riparian sites with documented WIFL occupancy, unless: 1) multiple surveys, completed to protocol, document a lack of occupancy, 2) all documented occurrences are outside the regional survey protocol for determining WIFL occupancy during the breeding season, or 3) habitat type conversion has occurred. As indicated above, no active nest territories are known from the vicinity of the Project. However, the ENF has delineated several meadow complexes offering potential habitat near Project features. These sites include meadow complexes around Rubicon Reservoir, upper Gerle Creek, upper Rubicon River, upper Silver Creek, and Bosworth Meadows near the southeast corner of Union Valley Reservoir. Other areas meeting the definition of "emphasis" habitat may be identified through the initial phase of this study. Field studies will be restricted to those lands where the Licensee has legal access (e.g., ownership/easement rights, public lands) and will not occur on private lands without prior permission from the landowner.

6.13.5 Information Needed From Other Studies

Determining the distribution of potential WIFL nesting habitat will require information from the Vegetation Mapping, Riparian Vegetation, and Wetland studies. Determining the location of facilities and high-use recreation areas that may attract brown-headed cowbirds will require information from existing project maps and the various Recreation Studies. Important information will be also be derived from past and current monitoring efforts conducted by ENF staff biologists, from a review of the scientific literature, and from consultations with the Licensee on proposed Project activities.

6.13.6 Study Methods and Schedule

The WIFL nesting habitat study methods are based on the Standards and Guidelines presented in the Sierra Nevada Forest Plan Amendment (USDA 2001) and the protocols specified in *A Willow Flycatcher Survey Protocol for California* (Bombay et al. 2000).

Pre-Field Investigations

The pre-field investigation consists of an information review and mapping exercise to delineate project-related high-use areas and potential WIFL habitat that exist in close proximity (i.e., within 0.5-mile) to each other. These areas will be the location for subsequent field surveys. The pre-field investigation includes the following tasks:

- Delineate all known WIFL habitat, emphasis habitat (i.e., wet meadows greater than 15 acres that have standing water after June 1 and a deciduous shrub component) and other suitable habitat as determined by Licensee in collaboration with agency personnel. Information to be derived from botanical studies and ENF data.
- Determine if and where Project-related high-use areas exist within 0.5-mile of the habitat identified above. High-use areas include all developed Project facilities and associated recreation sites, including campgrounds and dispersed recreation sites that exhibit evidence of frequent use other than transient (i.e., pass-through hiking) use, and sites used by any number of pack animals.

Field Investigations

The standardized protocol for WIFL surveys is a 1-year effort that includes the following steps:

- To document WIFL presence/absence in the survey year, a minimum of two surveys will be conducted at each site delineated during the Pre-Field Investigation. One survey during Period 2 (June 15-25) is mandatory and is supplemented by one survey during either Period 1 (June 1-14) or one survey during Period 3 (June 26-July 15). Even if birds are detected during survey Period 2, a second visit is required to more accurately estimate territory numbers. Successive surveys must be at least 5 days apart. Period 1 surveys are not appropriate if riparian shrubs have not yet leafed out.
- A follow-up visit is required when a flycatcher is detected, and suspected but not confirmed to be a WIFL (no *fitz-bew* call). Follow-ups can occur on the same day as the survey visit if they can be completed by 10:00 am, and must be completed within 5 days of the initial detection.
- Delineate survey points on a map, aerial photo, or using Global Positioning System (GPS) intrumentation. Survey points should be spaced a maximum of 50 m for large open meadows and 30 m for areas with tall, dense vegetation, and/or high levels of stream noise that impair sight or hearing. Where vegetation and topography allow, the observer can pace off the 50/30-m distance. If the point falls in a location where sight or hearing is impaired, another point should be established within a 10-m radius of the original point. The same points must be used for both visits during the year, and between years. Points need not be established in portions of meadows that are further than 50 m from a stand of riparian deciduous shrubs or sapling stage deciduous trees.
- At each survey point, broadcast recorded songs, look and listen for responses, and record detections over a 6-minute period. Do not broadcast calls while walking between survey points. Detection of a *fitz-bew* call is essential for a positive record of WIFL.
- Begin surveys as soon as there is sufficient light for safe walking and conclude by 10:00 am. Do not survey during steady rain or wind greater than 12 mph (indicated by leaves and small twigs in constant motion).
- Pre-broadcast listening - start at a survey point at one end of the site and stand quietly and listen for spontaneous singing by WIFL and look for birds for 10 minutes.
- Tape broadcasting - After initial listening period, begin active survey. At each point, listen initially for 1 minute and then broadcast the *fitz-bew* call 4 times in a 30-second span, then listen and watch for 2 minutes. Repeat for a total of 6 minutes.
- If a WIFL is detected, record the point, number, time, and whether this is the 1st, 2nd, 3rd, etc. detection. Also record the type of detection (visual, *fitz-bew*, call) and approximate distance of the detection.
- If a bird is detected but not confirmed as a WIFL, mark the location and make a follow-up visit.
- LOOK AND LISTEN FOR COWBIRDS in the vicinity of the survey site and record presence/absence, number of individuals, and activity of these bird(s). Record human activity in area and cowbird associations with this activity.
- Implement all other procedures as specified in the protocols.

6.13.7 Analysis

Detection of WIFL and/or brown-headed cowbirds will be evaluated with respect to the proximity, type, and duration of human activity in the vicinity of the site. The evaluation will include a thorough review of the literature and consultation with experts to determine findings of related studies on the response of cowbirds and WIFL to the types of activities in question. The evaluation will consider and present recommendations to reduce cowbird presence in the vicinity of the WIFL habitat.

6.13.8 Study Output

Study results will be presented to the Terrestrial Resources Technical Working Group (TWG) and Plenary Group toward the end of 2002. However, the ultimate study output will be a written report that includes the issues addressed, objectives, study area, methods, analysis, results, discussion, and conclusions. The reports will be prepared in a format that allows the information to be inserted directly into the Licensee-prepared Draft Environmental Assessment that will be submitted to FERC with the Licensee's application for a new license.

6.3.9 Preliminary Estimated Study Cost

A preliminary estimated study cost will be prepared after the Plenary Group approves the plan.

6.13.10 TWG and Plenary Group Endorsement

On April 16, 2002 the following TWG participants gave approval to the plan: USFS, BLM and SMUD.

On May 1, 2002 the following participants gave Plenary Group approval to the plan: USFS, BLM, USFWS, Taxpayers of El Dorado County, Friends of El Dorado County, Camp Lotus, El Dorado County Water Agency, El Dorado County, Placer County Water Agency, California Department of Fish and Game, California State Water Resources Control Board, Pacific Gas and Electric and Friends of the River. None of the participants at the meeting said they could not “live with” this study plan.

6.13.11 Literature Cited

Bombay, H.L., T.M. Ritter, and B.E. Valentine. 2000. A willow flycatcher survey protocol for California. June 6, 2000. 50 pp.

Grinnell, J., and A.H. Miller. 1944. The distribution of the birds of California. Pacific Coast Avifauna No. 27.

USDA (United States Department of Agriculture, Forest Service). 2001. Sierra Nevada Forest Plan Amendment: Final Environmental Impact Statement, Volumes 1-6 and Record of Decision. Pacific Southwest Region, San Francisco, CA. January 2001.

Valentine, B.E. 1987. Implications of recent research on the willow flycatcher to forest management. USDA Forest Service, Pacific Southwest Region, Annual Workshop. Fresno, CA, environmental section staff report. Kings River Conservation District, Research Report 87-002.

WILLOW FLYCATCHER NESTING HABITAT TECHNICAL REPORT

SUMMARY

This technical report provides the results of surveys for willow flycatcher (*Empidonax trailii*), a State of California-listed endangered species, and an assessment of potential nesting habitat within the Upper American River Project (UARP) area. Habitat to be surveyed was identified in collaboration with the Eldorado National Forest, Pacific Ranger District, and included three meadow complexes at the northwest side of Union Valley Reservoir and a small complex at the upper end of Rubicon Reservoir. Study methodologies followed standard protocols (Bombay et al. 2000). Broadcast call surveys for willow flycatcher and nesting habitat assessments were conducted at Union Valley Reservoir on June 20, 2002 (Protocol –defined Period 2 Survey) and July 9-10, 2002 (Protocol-defined Period 3 Survey). Period 2 surveys and a nesting habitat assessment were conducted at Rubicon Reservoir on June 25, 2002, but Period 3 surveys were not conducted after the initial assessment revealed that suitable nesting habitat was lacking. No willow flycatchers were detected during surveys. Brown-headed cowbirds, a nest parasite of willow flycatcher, was also not recorded during protocol surveys but was recorded in low numbers elsewhere in the UARP area incidental to this study. In general, meadow habitats within the study area offer very low habitat suitability for willow flycatcher based on the criteria defined in the Sierra Nevada Forest Plan Amendment (USDA 2001) and standardized protocols (Bombay et al. 2000).

1.0 INTRODUCTION

This technical report is one in a series of reports prepared by Devine Tarbell & Associates, Inc., (DTA) for the Sacramento Municipal Utility District (SMUD) as an appendix to SMUD's application to the Federal Energy Regulatory Commission (FERC) for a new license for the Upper American River Project (UARP or Project). The report addresses willow flycatcher (*Empidonax trailii*), a State of California listed Endangered species, and its nesting habitat within the Project area and includes the following sections:

- **BACKGROUND** – Summarizes the applicable study plan approved by the UARP Relicensing Plenary Group; a brief description of the issue questions addressed, in part, by the study plan; the objectives of the study plan; the study area, and agency information requests. In addition, requests by resource agencies for additions to this technical report are described in this section.
- **METHODS** – A description of the methods used in the study, including a listing of study sites.
- **RESULTS** – A description of the most important data. Copious raw data, photographs, and drawings, are provided by request in a separate compact disc (CD) for additional analysis and review by interested parties.
- **ANALYSIS** – An analysis of the results, where appropriate.
- **LITERATURE CITED** – A listing of all literature cited in the report.

This technical report does not include a detailed description of the UARP Alternative Licensing Process (ALP) or of the UARP, which can be found in the following sections of SMUD's application for a new license: The UARP Relicensing Process, Exhibit A (Project Description), Exhibit B (Project Operations), and Exhibit C (Construction).

Also, this technical report does not include a discussion of the effects of the UARP on willow flycatchers and related environmental resources, nor does the report include a discussion of appropriate protection, mitigation and enhancement (PM&E) measures. An impacts discussion regarding the UARP is included in the applicant-prepared preliminary draft environmental assessment (PDEA) document, which is part of SMUD's application for a new license. Development of resource measures will occur in settlement discussions, which will commence in 2004, and will be reported in the PDEA.

2.0 BACKGROUND

2.1 Willow Flycatcher Study Plan

On January 2, 1991, the State of California designated the willow flycatcher as an endangered species. *E. t. brewsteri*, the subspecies found on the Pacific slope of the Sierra Nevada is also designated by the USDA Forest Service, Region 5, as a sensitive species and is listed as a species of concern by the USFWS, Region 1 (Green et al. 2003). In response to the status and protections afforded the willow flycatcher under the California Endangered Species Act and federal management directives, the UARP Terrestrial Resources Technical Working Group (TWG) developed the UARP Willow Flycatcher Nesting Habitat Study Plan. The TWG approved this plan on April 16, 2002 and the UARP Relicensing Plenary Group approved the plan on May 1, 2002. The study plan was designed to address, in part, the following issues questions developed by the Plenary Group:

Issue Question 7(b).	What are the relevant and known factors (limiting and beneficial) affecting special status bird populations in the Project area and how/where are those factors influenced by Project operation and maintenance?
Issue Question 10.	What are the Project impacts on special status birds with particular emphasis on Project facilities, operation, maintenance and Project-influenced recreation?
Issue Question 13.	To what extent do Project operations and maintenance activities and Project-induced recreation affect willow flycatcher populations?

The objectives of the study plan were to determine if UARP-related areas of concentrated human activity (i.e., facilities, campgrounds, high-use dispersed recreation sites) are located near potential willow flycatcher nesting habitat and, if so, determine if willow flycatchers were using these areas and if these areas were attracting brown-headed cowbirds (*Molothrus ater*), a pernicious nest parasite of willow flycatcher.

The initial study area included all potential willow flycatcher nesting habitat within 0.5-mile of UARP-related facilities and recreation sites. This nesting habitat was defined by the Sierra Nevada Forest Plan Amendment (USDA 2001) as follows: 1) occupied habitat; 2) known

willow flycatcher sites; 3) emphasis habitat (i.e., meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component); and 4) other suitable habitat as determined by SMUD in collaboration with agency personnel. Occupied habitats are meadows or riparian sites with documented willow flycatcher occupancy, unless: 1) multiple surveys, completed to protocol, document a lack of occupancy; 2) all documented occurrences are outside the regional survey protocol for determining willow flycatcher occupancy during the breeding season; or 3) habitat type conversion has occurred.

2.2 Water Year Types

The information in this subsection is provided for informational purposes, as requested by agencies. The derivation of water year types is described in the *Water Quality Technical Report*. Table 2.2-1 presents water year types for the period that is pertinent to this *Willow Flycatcher Nesting Habitat Technical Report*.

Table 2.2-1. Water year types applied to individual months of years 2001-2003 (D=Dry; BN=Below Normal).

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
2002	D	BN	BN	BN	BN	BN	BN	BN	BN	BN	BN	BN
2003	BN	BN	BN	D	BN	BN	BN	BN	BN	BN	BN	BN

2.3 Agency Requested Information

In a letter dated December 17, 2003 to SMUD, the agencies identified by study, information they believed they needed to begin settlement discussions, with the understanding that additional information might be requested. While the Willow Flycatcher Study was not specifically addressed, the agencies general comment regarding terrestrial studies is pertinent:

- All studies will need GIS shape files showing habitat/vegetation types and spatial relationships with meta-data.
- Shape files will need to include survey locations and positive sightings/responses.
- Spreadsheet formats that include: bats, bald eagle/osprey, mesocarnivores, goshawks, California spotted owl, willow flycatcher, rare plants, noxious weeds.

    - Location
    - Date
    - Species observed/captured and specific UTM coordinates
    - Habitat composition
    - On site (In situ) verification of WHR habitat types
    - Method of capture
    - Nest locations
    - Activity centers

Figure 3.2.1-1 (Appendix A) is a GIS map showing survey locations and call points for willow flycatcher at Union Valley. Representative photos of survey locations are provided in Appendix

B. Applicable field observations were recorded in notebooks rather than on data sheets and are summarized in Section 4.0, Results. In summary, no willow flycatchers or suitable habitat were recorded during this study.

In a May 13, 2004 letter, the agencies stated in regards to the *Willow Flycatcher Nesting Habitat Technical Report* (February 2004) the following:

- We have reviewed this study report and have no comments on the report.

The Terrestrial Resources TWG met on June 21, 2004 to consider "conclusions" relative to willow flycatchers and to develop recommendations for consideration by the Settlement Negotiation Group. The TWG agreed on the following general conclusions:

1. The Issue Questions and Objectives stated in the Willow Flycatcher Study Plan are adequately addressed by the information provided in the *Willow Flycatcher Technical Report*.

2. Methods employed were adequate to address Issue Questions and Objectives.

The TWG also developed the following recommendation for consideration by the Settlement Negotiations Group:

As part of a management plan for willow flycatchers:

1. Any proposed facility development activity by the Eldorado National Forest or SMUD will be assessed for potential effects on willow flycatcher. If any effects can be determined, then a focused species survey will be performed, depending on location of the proposed development/activity as well as habitat suitability.

3.0 METHODS

The study methods conformed to those approved by the UARP Relicensing Plenary Group in the Willow Flycatcher Nesting Habitat Study Plan. These methods were based on the Standards and Guidelines presented in the Sierra Nevada Forest Plan Amendment (USDA 2001) and the protocols specified in *A Willow Flycatcher Survey Protocol for California* (Bombay *et al*. 2000).

3.1 Pre-Field Investigations

The pre-field investigation consisted of: 1) consultations with ENF biologists (D. Yasuda and J. Ebert, Pacific Ranger District) on historical willow flycatcher nesting records and the location of potential nesting habitat within the study area; and 2) a review of available maps to determine which of these potential habitats were located within 0.5-mile of UARP facilities and related high-use areas, thereby warranting further consideration. These efforts resulted in identification of meadow/wetland/riparian habitats of interest to ENF at the following locations:

- Rubicon Reservoir/Upper Rubicon River Meadows – A series of small wet meadows located adjacent to Rubicon Reservoir and the inflow of the Upper Rubicon River (see *Riparian Vegetation and Wetlands Technical Report* for detailed descriptions of this site).
- Upper Gerle Creek – A large wet meadow located primarily on privately-owned lands along upper Gerle Creek about half-way between Loon Lake and Gerle Creek reservoirs (see *Riparian Vegetation and Wetlands Technical Report* for detailed descriptions of this site).
- Bosworth Meadow – A large wet meadow located entirely on privately-owned land near the confluence of Driscoll Creek and Jones Fork Silver Creek.
- Northwest side of Union Valley Reservoir - A large complex of palustrine emergent wetlands located both east and west of the Camino Campground Peninsula (see *Riparian Vegetation and Wetlands Technical Report* for detailed descriptions of this site).

As indicated in the Willow Flycatcher Nesting Habitat Study Plan, field surveys were to be restricted to those lands where SMUD had legal access (e.g., ownership/easement rights, public lands). Upper Gerle Creek Meadow and Bosworth Meadow occur on privately-owned land and were therefore eliminated from further investigation. Moreover, SMUD conferred with the ENF Pacific Ranger District (personal communication with J. Ebert, Biologist, on June 18, 2002) to seek concurrence on the final selection of survey sites and reached agreement that the surveys would be restricted to the large shoreline meadow complexes on the northwest side of Union Valley Reservoir and, to the extent reasonable, the small meadow complex at the upper end of Rubicon Reservoir (see *Riparian Vegetation and Wetlands Technical Report*).

3.2 Field Sampling

Qualified biologists applied the field survey protocols specified in *A Willow Flycatcher Survey Protocol for California* (Bombay *et al*. 2000). These single season survey protocols require a minimum of two surveys at each site identified during the Pre-Field Investigation phase. The protocols define three distinct survey periods: Period 1 (June 1-14), Period 2 (June 15-25), and Period 3 (June 26-July 15). One of the two required surveys must be conducted during Period 2 while the second survey can be performed during either Period 1 or Period 3, even if birds are detected during survey Period 2. Successive surveys must be at least five days apart. Surveys during Period 1 are not appropriate if riparian shrubs have not yet leafed out. A follow-up visit is required when a flycatcher is detected, and suspected but not confirmed to be a willow flycatcher (no *fitz-bew* call). Follow-up visits can occur on the same day as the survey visit if they can be completed by 10:00 a.m., and must be completed within five days of the initial detection.

For this study, Period 1 surveys were not conducted because riparian shrubs had not leafed out at the sites selected. Period 2 surveys were conducted at Union Valley Reservoir on June 20, 2002 and at Rubicon Reservoir on June 25, 2002. Period 3 supplemental surveys were conducted on July 9 and 10, 2002 at Union Valley Reservoir but were not performed at the Rubicon Meadow sites because habitat was found to be unsuitable for willow flycatcher during Period 2 surveys.

3.2.1 Union Valley Reservoir Surveys

Seventy-three (73) call points were established at approximately 50-meter intervals along transects running parallel to the forest/meadow edge surrounding three meadow complexes on the northwest shore of Union Valley Reservoir. These meadows are designated as UVR-1, UVR-2, and UVR-3 on Figure 3.2.1-1, Appendix A. Representative photographs of these meadows are included in Appendix B. Each call point was recorded using Global Positioning System (GPS) (Garmin GPS III, GARMIN International Inc., Olathe, Kans.) to find Universal Transverse Mercator (UTM) coordinates. Points were not established along the meadow/reservoir interface because these areas lacked any shrub or tree component.

Pre-recorded *fitz-bew* calls were obtained on compact disk from the Macaulay Library of Natural Sounds, Cornell University Laboratory of Ornithology, Ithaca, New York. These calls were transferred to a Sony Mini-disc Walkman© player and broadcast through a Mini-Vox Model PB-25© amplified speaker system manufactured by Anchor Audio, Torrance, California. Surveys were performed between 8:00 and 10:00 a.m. on clear, calm days. At each call point, a biologist listened initially for one minute, broadcast the *fitz-bew* call four times in a 30-second span, listened and watched for two minutes, and then repeated these steps for a total of six minutes. In addition, the surveyor looked and listened for brown-headed cowbirds in the vicinity of the survey site and, if detected, recorded number of individuals, their behavior, any human activity in the area, and cowbird associations with this activity.

3.2.2 Rubicon Reservoir Area

Biologists evaluated potential willow flycatcher nesting habitat at Rubicon Reservoir and conducted limited broadcast call surveys on June 25, 2002 (Period 2). Period 3 supplemental surveys were not performed because of poor habitat suitability and limited size.

3.2.3 Incidental Observations

Biologists engaged in these field surveys also recorded incidental observations of wildlife for purposes of generating a comprehensive species list for the overall UARP area. Data recorded for each observation generally included: species, date of observation, location, and any remarkable behavior or activity exhibited by the animals observed.

4.0 RESULTS

4.1 Willow Flycatcher Surveys and Habitat Descriptions

No willow flycatchers were detected during any field surveys. Detailed descriptions of riparian/meadow habitats throughout the UARP area, and specifically at survey locations are presented in the *Riparian Vegetation and Wetlands Technical Report*. Key habitat features at the three meadow complexes surveyed at Union Valley Reservoir (UVR-1, UVR-2, and UVR-3) are summarized in Table 4.1-1.

Table 4.1-1. Habitat descriptions for three meadow complexes at Union Valley Reservoir where surveys were conducted for willow flycatcher in 2002.[1]			
Habitat Parameter	**UVR-1[2]**	**UVR-2[3]**	**UVR-3[4]**
Acreage[5]	5.98	5.83	38.8
Classification	Lakeshore Basin Wetland	Lakeshore Basin Wetland	Lakeshore Basin Wetland
Hydrology	Groundwater seepage and drainage from higher elevations	Drainage from higher elevations	Drainage from higher elevations
Common plant species (all sites)	*Carex vesicaria, Carex aquatilus Poa palustris, Rumex acetosella, Juncus balticus, Sidalcea reptans, Polygonum bistortoides, Lupinus spp., Pinus contorta*		
Willow component	No	No	No

[1]Habitat descriptions are excerpted from the *Riparian Habitats and Wetlands Technical Report*.
[2]UVR-1 corresponds to the combined area of UVR4 and UVR10 as described in the *Riparian Habitats and Wetlands Technical Report*.
[3]UVR-2 corresponds to UVR3 in the *Riparian Habitats and Wetlands Technical Report*.
[4]UVR-3 corresponds to UVR5 in the *Riparian Habitats and Wetlands Technical Report*.
[5]Acreage is for wetlands above the high water line.

Brown-headed cowbirds were also not detected during willow flycatcher surveys. However, incidental observations of cowbirds were recorded at two other locations within the UARP area: 1) Gerle Creek Reservoir - June 19, 2002 and June 3, 2003; and 2) Wench Creek Campground – June 12, 2002. Neither of these cowbird observations occurred within two miles of the meadow/riparian habitats where protocol surveys were conducted for willow flycatchers.

4.2 Incidental Observations

Biologists recorded approximately 140 species of birds and mammals during UARP field studies including this Willow Flycatcher Nesting Habitat Study. These incidental observations are provided in Appendix D of the *Waterfowl Nesting Habitat Technical Report*.

5.0 ANALYSIS

USDA Forest Service unpublished data excerpted from Green et al. (2003) identifies 315 known willow flycatcher breeding territories within the Sierra Nevada. Only one of these territories is located within the Eldorado National Forest suggesting a general lack of suitable breeding habitat. Green et al. (2003) used a combination of existing data and Habitat Suitability Index (HIS) Models to develop five components that define the habitat requirements of willow flycatchers in the Sierra Nevada.

- ***Elevation:*** Most (88 percent) Sierra Nevada meadows used by breeding willow flycatchers occur between 4,000 and 8,000 feet elevation. Research by Bombay (1999) suggests that there is an upper elevational limit to flycatcher use in the Sierra Nevada attributable to the presence of snow and unleafed willows at the time of spring arrival.
- ***Wetness:*** Successful nesting territories are strongly associated with standing or flowing water or heavily saturated soils.
- ***Meadow Size:*** More than 95 percent of the breeding meadows are greater than 10 acres and more than 80 percent are greater than 20 acres. The most successful (i.e., ≥ 1 territory fledged young) meadows are greater than 15 acres.

- ***Shrub Coverage:*** Riparian deciduous shrub coverage of 20 to 30 percent of meadow area has been suggested as a minimum for suitable habitat.
- ***Foliar Density:*** Foliar density is a measure of the riparian deciduous shrub at the 2-meter shrub height level, or the level of the shrub layer where actual nesting generally occurs. A foliar density of 76 percent has been suggested as representative of suitable habitat.

The meadows located on the north shore of Union Valley Reservoir (Figure 3.2.1-1, Appendix A) and Rubicon Reservoir that were surveyed for this study are evaluated from a botanical perspective in the *Riparian Vegetation and Wetlands Technical Report*. As shown in Table 5.0-1, these meadows do not compare favorably to two of the key descriptors of suitable habitat (i.e., Size, Shrub Coverage) outlined above. UVR-3 (corresponding to UVR-5 in *Riparian Vegetation and Wetlands Technical Report*) at 38.8 acres is the only meadow complex in the study area that exceeds the 15-acre size criterion for "emphasis habitat" as defined in the *Sierra Nevada Forest Plan Amendment* (USDA 2001). Perhaps more importantly, none of the meadows in the study area contain a significant shrub component and most lack willows (*Salix* sp.) entirely. The combination of poor habitat suitability, lack of willow flycatcher detections during the protocol-level surveys, and the absence of known willow flycatcher nesting territories in the vicinity of the UARP suggest that meadows in the study area cannot support willow flycatcher under current conditions.

Table 5.0-1. A comparison between reported habitat suitability indices for willow flycatcher and site conditions of meadows adjacent to Union Valley and Rubicon Reservoirs (i.e., meadows surveyed during this study).

Component	Habitat Suitability indices	Union Valley Reservoir Meadows	Rubicon Reservoir Meadows
Elevation	4,000 to 8,000 feet	Approximately 4,800 feet	Approximately 6,500 feet
Wetness	Standing/flowing water or heavily saturated soils	Most have standing/flowing water or heavily saturated soils through breeding season	Primarily reservoir-influence to 1.5 meters above high water mark. Few pockets flooded by river overflow. From seasonally wet to mesic
Meadow Size	95 % of meadows used for breeding > than 10 acres	Meadow (above high water line) range in size from 5.83 to 38.8 acres	Small pockets estimated at less than 1 acre
Shrub Coverage	Minimum 20-30 percent deciduous shrub cover	Less than 5 percent estimated and no willows.	Less than 10 percent but with some willows (*Salix lasiolepis*) < 6 ft high
Foliar Density	Approximately 76 percent at 2 meters height	Not determined during this study	Not determined during this study

6.0 LITERATURE CITED

Bombay, H.L., T.M. Ritter, and B.E. Valentine. 2000. A willow flycatcher survey protocol for California. June 6, 2000. 50pp.

Green, G. A., H. L. Bombay, and M. L. Morrison. 2003. Conservation assessment of the willow flycatcher in the Sierra Nevada. Foster Wheeler Environmental Corporation, Bothell, Washington, and U.S. Department of Agriculture, Forest Service, Region 5. March 2003. 62 pp.

USDA (United States Department of Agriculture, Forest Service) 2001. Sierra Nevada Forest Plan Amendment: Final Environmental Impact Statement, Volumes 1-6 and Record of Decision. Pacific Southwest region, San Francisco, CA. January 2001.

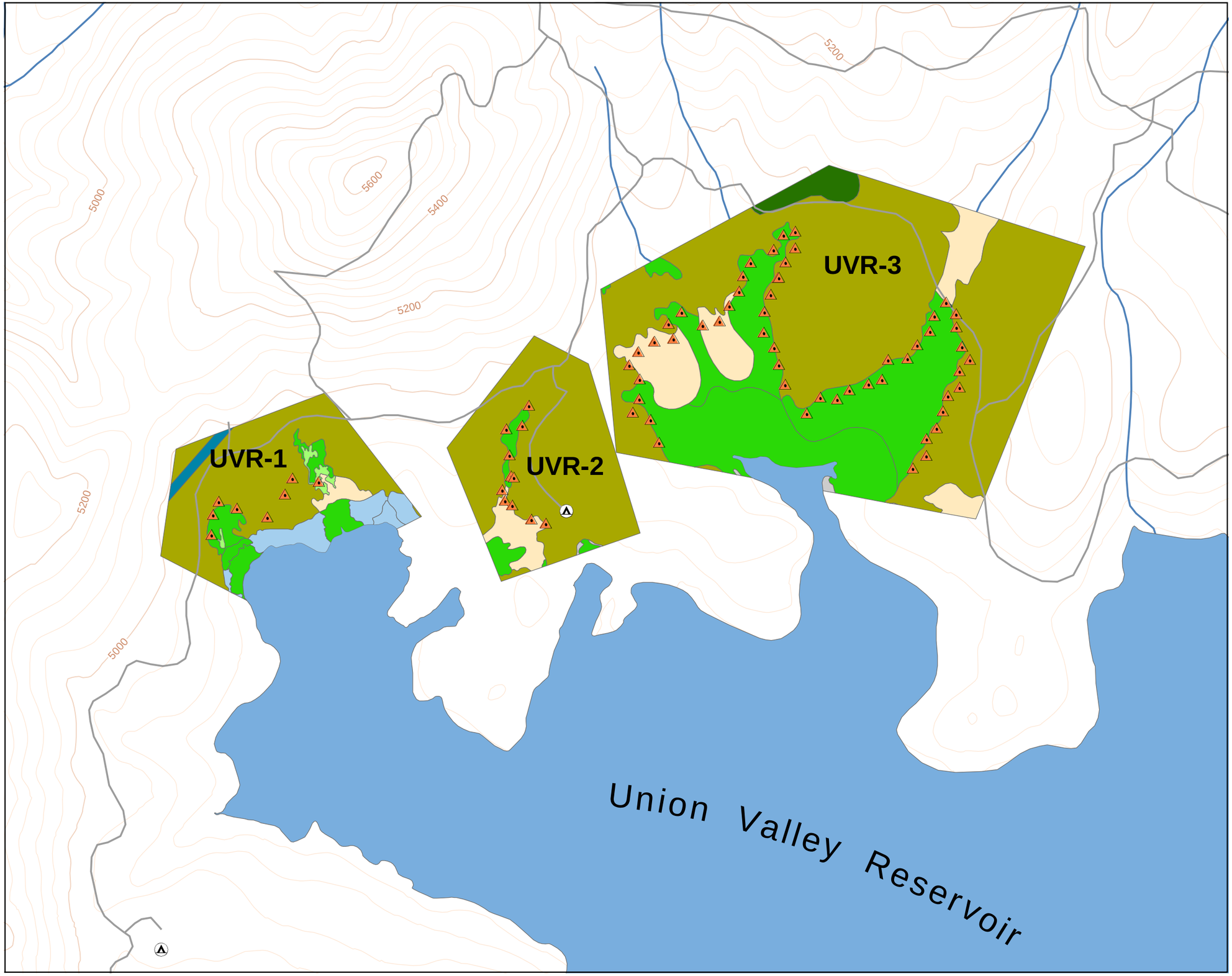
APPENDIX A

FIGURE 3.2.1-1. SURVEY LOCATIONS FOR WILLOW FLYCATCHER AT UNION VALLEY RESERVOIR

Upper American River Project

SMUD

Figure 3.2.1-1 Survey Locations for Willow Flycatcher at Union Valley Reservoir



- WIFL Call Points
- Campground
- Access Road

Vegetation Type

- Barren (BA)
- Upper Montane Mixed Chaparral (CX)
- Wet Meadows (HJ)
- Perennial Grass (HM)
- Mixed Conifer (MF)
- Not Wetland Below High Water
- Ponderosa Pine (PP)
- Mountain Alder (TA)
- Water (WA)

N

SCALE 1:10,000

0 510 1,020 1,530 2,040 Feet

Prepared by VESTRA Resources, Inc., Redding. CA. Jan. 22, 2004

APPENDIX B

REPRESENTATIVE PHOTOGRAPHS OF WILLOW FLYCATCHER SURVEY AREAS AT UNION VALLEY RESERVOIR

- Willow Flycatcher Survey Area at Union Valley Reservoir: UVR-1
- Willow Flycatcher Survey Area at Union Valley Reservoir: UVR-2
- Willow Flycatcher Survey Area at Union Valley Reservoir: UVR-3

B-1. Willow Flycatcher Survey Area at Union Valley Reservoir: UVR-1

B-2. Willow Flycatcher Survey Area at Union Valley Reservoir: UVR-2

B-3. Willow Flycatcher Survey Area at Union Valley Reservoir: UVR-3