

**APPENDIX I**  
**Placer County - Watershed Survey Protocol**

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# APPENDIX I. PLACER COUNTY - WATERSHED SURVEY PROTOCOLS

## Background and Goals

Important goals of the Watershed Surveys are to assess the accuracy of the land cover mapping and to identify important natural communities and suitable habitats for covered species that occur in the Phase I Planning Area of western Placer County (Phase I Area). This initial information will be used to develop conservation strategies for these species in the preparation of a county-wide Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP). In order to gather information necessary to prepare the HCP/NCCP, an inventory of natural resources is required to provide detailed information on the status, extent, and distribution of all the major ecosystems in the Phase I Area. Watershed-based field surveys will be performed to obtain this information as efficiently as possible. This document describes the protocols for watershed surveys in the Phase I Area (39 watersheds encompassing about 270,000 acres; average watershed size approximately 6,430 acres). The specific objectives of the watershed-based field surveys in the Phase I Area are to:

- Assess the accuracy of the Geographic Information System (GIS) maps of vegetation and land cover polygons and selected data themes on a watershed-scale;
- Perform Rapid Assessment Procedures (RAP) surveys at sample points in randomly-selected vegetation polygons to estimate the extent and disturbance history of large-patch ecosystems in each watershed, and their suitability to support covered species (use the Individual Habitat Sample Point Data Form)
- Compile summaries for each watershed using the RAP surveys that were completed at individual vegetation polygons (use the Watershed Survey Data Form); and
- Prepare a summary report and GIS maps describing the existing biological conditions and land uses for each watershed.

## General Notes on the Watershed Surveys

These protocols will enable the survey team to obtain the required information as efficiently as possible. Minor modifications to these protocols may be necessary depending on access constraints and time available to complete the survey. All field survey work will be done from public roads, on public lands, or on private lands where permission is granted from the landowners. Assume that all land is private and DO NOT TRESPASS if there is uncertainty about the land ownership. Also, avoid stopping in front of residences and generally be discrete about displaying maps, cameras, and clipboards. Be careful about pulling off roads and do not violate any traffic laws to sample a polygon or observe a species. Much of western Placer County is relatively flat topography; however, elevated vantage points should be used wherever possible to obtain the most coverage in the least amount of time. As each watershed is surveyed, record your route on the vegetation map for the watershed (use a highlighter to record this information).

### *Prefield Tasks*

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Watershed information packages have been prepared by a GIS specialist and include:

- Color vegetation map in 11x17 format
- Aerial photograph in 11x17 format with watershed boundaries
- Aerial photograph in 11x17 format with vegetation polygons
- Multiple maps showing (if present) wetlands, vernal pools, vernal pool complexes, covered species records, rice fields, emergent wetlands, riparian habitat, valley oak woodlands, and other important resources. The resource maps used for individual watersheds are based on office interpretations of aerial photographs, and at least one polygon of each mapped major habitat type is surveyed in each watershed.

Before conducting surveys within a watershed review all existing information in the watershed package. Carefully check the color vegetation map (11x17) against the original aerial photograph and linework overlay and mapped polygons (there is the potential for previously undetected “leaking” polygons, which exaggerate the extent of some cover types). Correct any discrepancies on the watershed aerial photograph prior to conducting the field work.

Plan your route through the watershed and consider the highlighted vegetation layers, data points, covered species layer, any signatures that are unclear on the aerial photographs, and other possible discrepancies in the draft GIS maps and data themes. Many of the black-line “roads” on the layer maps turn out to be private or non-existent, so it is important to check the existing road maps for which roads are open to the public. Gather all field equipment needed to complete the watershed survey (an equipment list is included as Table 1).

## **Verification of Vegetation Layers**

Vegetation was mapped by Jones & Stokes botanists early in 2003 using 2000 aerial photographs. The Placer Wildlife Habitat Relationship (PCWHR) classification scheme (based on the California WHR) was used to classify vegetation and land cover types. Attachment 1 contains a list and brief definitions of the PCWHR vegetation and land cover types with the acronyms used. Individual vegetation and land cover polygons were delineated at a scale of 1:9,600 onto acetate overlays that were then scanned electronically to create the GIS maps. The intent of the field visit is to assess the mapping effort to the extent possible and make changes to the GIS maps where appropriate.

1. Minimum mapping unit is 0.5 acres – about 150 ft x 150 ft, or 200 x 110 ft etc., and 0.1 acres for wetlands, about 60 ft x 70 ft, or 100 ft x 45 ft etc.

2. Certain habitat types need to be verified, particularly those with indistinct or unclear signatures; pay special attention to:

- rice fields (can include fallow fields that still retain level topography, water control structures, and canals and were in production within the last 2-3 years);
- seasonal wetlands within annual grassland;
- valley foothill riparian woodland, especially where located within a surrounding oak woodland type;
- the different types of foothill hardwood woodland (i.e., valley, live, blue, and mixed oak woodlands);
- foothill chaparral (may be several types of chaparral, try to describe these if possible);
- annual grassland (HAG) vs Irrigated Pasture (APA);
- foothill oak-pine (FOP) vs foothill hardwood types (FHH).

3. Use a fine-point marker to make mapping corrections on the watershed aerial photographs in the field. Most changes are likely to be attribute changes, however some line work may need to be refined. If the aerial gets confused or it is not possible to see the feature clearly, keep a running list of changes on a separate sheet and print another aerial photograph for additional changes and interpretation.

## Individual Habitat Sample Point Data Form

The intent of these sample points is to collect data on the dominant large-patch ecosystems within each watershed to provide a Rapid Assessment Procedure, or initial assessment, of the vegetation types and condition and surrounding land use characteristics at specific, randomly-chosen points within each watershed (Attachment I-6).

A GIS specialist will generate a random set of data points within each watershed (approximately 15 points) with the intent of providing enough points to sample 5 points per watershed (more than 5 points are needed in case access to several of the points is uncertain). Random number tables will be used in the field to determine the choice order of the 15 points. All the randomly selected sample points will be within mapped polygons that are within 100 ft. of public roads and have a minimum size of one acre.

At each point:

- Number the point: watershed number - point number, e.g., 7-1.
- Use the GPS unit to record coordinates for each point; record the lat/long and elevation on form.
- Take photographs facing North, East, South, and West; name them 7-1 N, 7-1 E etc.

Enter the PCWHR Habitat Type (see Attachment 1) in the box. Record the width of the polygon, if applicable. Circle Upland or Wetland.

There are two parts to the form:

- Environmental and vegetation data from the chosen polygon; and
- Land use and condition data in the polygon and surrounding area

### *Environmental Description*

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This provides a brief description of soil characteristics. It may not always be possible to access the polygon to investigate the soils:

- *Soil color* – record color of the A horizon using standard terminology.
- *Soil texture* – record texture of the A horizon using standard terminology.
- *Exposed soil* – record the percentage of ground surface that is bare soil; also record the reason (e.g., grading, cattle trampling, water erosion, etc.).
- *Rock outcrop/rock fragment content* – note the presence of rock outcrops, and record percentage of ground surface if it is greater than 5%; also record the presence and size of rock fragments in the soil (gravelly, cobbly, stony – with modifiers)

### *Vegetation Description*

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In the box provided, enter the Habitat Types using the PCWHR codes, the estimated width of the polygon (applies to linear habitats such as some wetlands, riparian, and forest types), circle upland or wetland; also enter the habitat codes for surrounding habitats.

*Vegetation Series* – identify the vegetation series (Sawyer & Keeler-Wolf, list provided in Attachment 2).

The aim of the next section is to record the dominant (greater than 10% aerial cover) species in a single vegetation type (similar to a releve) – if the vegetation type is mixed within the polygon, record data from the dominant vegetation type only.

*Drainage* – add comments on site drainage, management of creeks e.g., channelization, herbicide use, etc.

*Trees* – record the dominant tree species and their seral stage (late, mid, early). Record associated tree species.  
*Shrubs* – record the dominant and associated shrub species.  
*Herbs* – record the dominant and associated herbaceous species. If it is not possible to identify individual species (because of access limitations or phenological stage) record groups, e.g., annual grasses, introduced forbs.

### Habitat Stage (Tree-dominated Habitats)

For tree-dominated vegetation types, use the CWHR categories to record:

- Size class

Size Class	1	2	3	4	5	6
Stage	Seedling	Sapling	Pole	Small	Medium-Large	Multi-storied
DBH	< 1”	1”-6”	6”-11”	11”-24”	>24”	Size 5 over 4 or 3
Canopy – HW	-	<15’	15’-30’	30’-45’	>45’	
Canopy - conifer	-	-	<12’	12’-24’	>24’	

- Canopy closure class

Canopy Class	S –Sparse	O –Op en	M - Moderate	D - Dense
% Canopy Closure	10-24%	25-39%	40-59%	60-100%

*Ground cover* – record percentage cover of the following categories: herbaceous, woody debris, duff/litter, bare soil

### Land Uses and Impacts: Polygon and Surrounding Area

#### Impacts of current land uses

*Tree-dominated Habitats* - In the table provided, record the presence of the following land use types and the intensity of impact in both the polygon (P) and the surrounding (S) area: look for rural residential clearing, brush removal, fire-safety clearing, and tree-cutting; use the following scale to estimate impacts: None = no evidence; Low = less than 20% of the area is affected; Medium = 20% - 60% of the area affected; High = >60% of area affected. Record grazing intensity. Record any land use impacts not mentioned here under “other” and specify.

*Grassland and other herbaceous-dominated Habitats*– Record the presence/absence of irrigation, discing, leveling, remnant micro-topography. Space is also provided to comment on drainage – note the presence of natural creeks and/or management of drainageways, e.g., and the extent of channelization.

*Grazing intensity* – Record the type of grazing (cattle, horses, goats, sheep) and grazing intensity (all habitat types) using the following categories:

- N = None (no grazing is evident)
- L = Low (Native species remain and vegetation height is variable with some areas ungrazed)
- M = Medium (Native species remain and vegetation height is 4”- 10” tall)
- H = High (Some native species remain and vegetation height less than 4” tall)

*Noxious weeds* – Record any noxious weeds observed (list of species recorded in Placer County is provided in Attachment 5). Record level of infestation as follows:

- T = Trace (rare): less than 1% cover
- L = Low (occasional plants): between 1 and 5% cover
- M = Moderate (scattered plants): between 5 and 25% cover
- H = High (fairly dense): greater than 25% cover

## *Surrounding Area*

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The aim of this section is to describe the surrounding land in terms of patch size, impacts, and to note any limitations in access and visibility.

*Land Uses* – describe the land uses in the surrounding area - residential (units per acre), agricultural, industrial - and note and describe types and levels of impacts. Be factual – do not record interpretations or opinions. Note any large areas of contiguous habitat, and any adjacent important natural habitats.

*Problems with interpretation* – note any changes that have taken place since the air photo was taken; note and describe access and visibility limitations.

*Covered Species Occurrence* - note any covered species you observe, and the presence of their potential habitat areas (list of covered species provided in Attachment 3, a habitat matrix is provided in Attachment 4).

*Other Special-Status Species or Habitats Detected* – note any other special-status species observed.

## *Additional Comments*

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Refer to the completed Watershed Survey Form (Attachment 7) for examples of the types of comments that are appropriate here.

## **Watershed Survey Form**

The intent of the watershed survey form (Attachment 7) is to provide a summary of the information collected on individual habitats within the watershed (discussed above), and to provide information that will be useful in developing a narrative description of each watershed. Complete the form after surveying the overall watershed and keeping notes on land use, locations of unmapped small-patch ecosystems (e.g., narrow riparian corridors, high-quality vernal pools), special-status species locations, invasive weeds, and any unusual resources such as the presence of small-patch ecosystems.

Record facts, not opinions or interpretations, especially when discussing the impacts of land uses, management activities, development, etc. Refer to the Aspen Creek completed data form as an example of the level of detail that is required for each watershed. The watershed survey form should be filled out in the field immediately following the survey work, after the five sample point RAP forms have been completed for the randomly-selected vegetation polygons. Below is some guidance on filling out the watershed survey form.

### *Location / Environment Description*

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The GIS specialist will provide names for all of the watersheds in the Phase I Area, but these should be checked to ensure that each is named for a prominent feature (e.g., creek, landmark, hill, town, or city) on the USGS maps. Include the watershed number as shown on the Phase I Area watersheds map (provided).

### *Habitat / Land Cover Description*

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Dominant large-patch ecosystems:

- Provide a brief description of dominant vegetation and land cover types (Attachment 1), with some notes on location and ownership. Do not repeat detailed information that will be generated from the GIS, but provide a general characterization for the narrative description.
- Note any particularly large, contiguous areas of relatively undisturbed habitat.
- Note any lower-level vegetation info, (e.g. “Riparian is black willow dominated”).
- Note any mixed/mosaic types.

- Note ownership information if it seems relevant.
- Mention any other notable features, resources.

Small-patch ecosystems:

- List any small patch ecosystems with statements on approximate location, extent, and quality.
- List and describe potential for small-patch ecosystems where land is not accessible.

### *Land Uses And Types/Levels of Disturbance*

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Describe current land ownership (list major landowners if information is available) and uses;

Describe land use history and types and levels of impacts, management activities observed (e.g., fire history, grading, tree-cutting, heavy livestock use, OHV use, and residential development). Rate the level of each disturbance as low, medium, or high as described above.

Consider habitat fragmentation, extent of roads, erosion features observed, and successional stages of major habitats when describing land use history, disturbance, and other observations.

Mention and describe undisturbed areas, and delineate them on the vegetation maps for each watershed.

Mention any management activities and known history.

### *Problems With Interpretation*

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Mention any changes since air photos were taken.

Include description of access here. Highlight your route throughout the watershed on the watershed map, both driving and walking (walking will be uncommon given access restrictions). Assume that you will have NO access off road, and DO NOT TRESPASS.

Also mention any changes made to the vegetation map as a result of this survey.

### *Special-Status Species*

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Before conducting special-status wildlife or botanical surveys review all existing information, including the completed watershed summaries and maps in the watershed package. The GIS specialist will be preparing maps that show historical (pre-1990) and recent (post-1990) occurrences by watershed, as well as the polygons that may provide suitable habitat for individual covered species.

Plan your route through the watersheds and consider the highlighted vegetation layers, sample points, covered species layer, and other possible discrepancies in the draft GIS maps and data themes. Many of the black-line “roads” on the layer maps turn out to be private or non-existent, so it is important to check the existing road maps for which roads are open to the public.

Consult the list of covered and other special-status species (Attachment 3) and indicate suitable habitat areas or direct observations when they are made in the field. Do not expend extra time in the field attempting to verify the presence of these species. Visit each of the questionable occurrences mapped in the watershed (where access is available) and take notes on the condition of the habitat or species (i.e., is suitable habitat extant, or was the species observed?). The goal is to verify the existence of suitable habitats, not to perform surveys for covered species and other special-status species. Also note any other significant observations such as pending development or land use change at the site. Other special-status species in the Phase I Area are listed in Attachment 3 and primarily include DFG species of special concern and fully protected species and USFWS species of concern. As appropriate, also note suitable and occupied habitat areas for nesting raptors and swallows, and active bat roosts or maternity areas - check under bridges & other structures if they are accessible and provide suitable habitats).



## *Invasive Non-Native Species*

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Keep a running list of noxious weeds (list provided as Appendix 5). Define infestation levels as described above.

Based on preliminary surveys, several species of noxious weeds occur on most rural roadsides at varying levels of infestation. List species observed within the watershed, with the location and level of infestation for each species. Collect undocumented species where it is allowed (mostly just along roadsides), and when time permits.

Also note any invasive or non-native wildlife observed (e.g., wild pigs, large flocks of Eurasian Starlings, Brown-headed Cowbirds), and document any habitat disturbances caused by these species when they are encountered during the field surveys (e.g., soil or vegetation disturbance by wild pigs or wild turkeys). Note also any insect infestations of trees in forested areas if these are observed. Sudden Oak Death Syndrome has not yet been recorded in Placer County – but be aware of the signs and symptoms and record any potential signs - use the GPS unit to record location.

## *Additional Comments*

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Use this space to record any additional information or to expand on previous comments.

## **Post-Field Checklist**

- Check over the field data forms and make sure everything is completed and clear. Complete the watershed survey form if it was not finished in the field.
- Surveyors should review each other's completed forms for completeness and accuracy in the field.
- Photocopy all your field forms. File the copies in the designated file cabinet and the originals in the Placer Legacy office.
- Download the digital photographs into the P drive folder and rename with the watershed and point number.
- Download the GPS sample point locations into the P drive folder.
- Complete the Watershed Completion Checklist.
- Cross off, date, and initial your completed watershed on the master map to ensure that field work is not repeated.
- Report progress to the project manager and obtain additional survey packages.