

Study 5.1

SPECIAL-STATUS PLANTS

August 2011

1.0 Project Nexus

Yuba County Water Agency's (YCWA or Licensee) continued operation and maintenance (O&M) of the Yuba River Development Project (Project) may have an effect on special-status plants.

As part of this study, YCWA will also record incidental observations of noxious weeds, as well as United States Department of Agriculture, Forest Service (Forest Service) Sensitive Fungi and Watchlist Plant Communities.

2.0 Resource Management Goals of Agencies with Jurisdiction Over the Resource to be Studied

YCWA believes that four agencies have jurisdiction over special-status plants and noxious weeds in the geographic area included in this study proposal: 1) the United States Department of Agriculture, Forest Service (Forest Service) on National Forest System (NFS) land; 2) United States Department of Interior, Fish and Wildlife Service (USFWS); 4) California Department of Fish and Game (CDFG); and 4) California Department of Food and Agriculture (CDFA). Each of these agencies and their jurisdiction and management direction, as understood by YCWA at this time, is discussed below.

Forest Service

The Forest Service's jurisdiction and applicable management goals are described by the Forest Service from page 59 to 76 in the Forest Service's March 2, 2011 letter to FERC providing the Forest Service's comments on YCWA's Pre-Application Document (PAD). The Forest Service's jurisdiction and management goals are not repeated here.

USFWS

USFWS's jurisdiction and goals and objectives are described by USFWS on pages 1 through 3 of USFWS's March 7, 2011 letter to FERC that provided USFWS's comments on YCWA's PAD. USFWS's jurisdiction, goals and objectives are not repeated here.

CDFG

CDFG's jurisdiction is described by CDFG on page 1 of CDFG's March 2, 2011 letter to FERC providing CDFG's comments on YCWA's PAD. CDFG's goal, as described on page 2 of CDFG's letter is to preserve, protect, and as needed, to restore habitat necessary to support native fish, wildlife and plant species.

CDFA

CDFA's jurisdiction pertains to weeds on State of California land.

3.0 Study Goals and Objectives

The goal of this study is to provide information to determine whether continued Project O&M or recreational use of Project facilities may have an adverse effect on special-status plant species.

The objective of this study is to gather the information necessary to perform this analysis.

4.0 Existing Information and Need for Additional Information

4.1 Special-Status Plants¹

For the purpose of this Relicensing, special-status plants are those plants that have a reasonable possibility of occurring in the Project Area and meets one or more of the following criteria:

- Found on NFS land managed by the Forest Service and formally listed as Forest Service Sensitive Plant species for the PNF (FSS-P) or the TNF (FSS-T) or as a Forest Service Watch List species by the PNF (FW-P) or the TNF (FW-T).
- Found on the California Department of Fish and Game (CDFG) Commission's *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFG 2010), including those that are state-listed rare (SR) or a state candidate (SC) for listing species listed under the Native Species Plant Protection Act of 1977 (CDFG 2010b).
- Found on the list of species proposed for listing under the federal ESA, including species that are proposed for listing as endangered (FPE) or threatened (FPT), a candidate for listing (FC), or proposed for delisting (FPD).
- Found on the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants*, including species that are rated as CNPS 1A or CNPS 1B through 4B (CNPS 2010).

Fully protected botanical species listed under CESA and ESA are not considered special-status for the purpose of the Relicensing, but are addressed separately in CESA-Listed Plants Study 7.5, and the ESA-Listed Plants Study 7.1. These species include those plants that are state threatened (ST) or endangered (SE) under the CESA, or federally threatened (FT) or endangered (FE) under the ESA.

As discussed in section 7.5 of YCWA's Pre-Application Document (YCWA 2010), existing and relevant information regarding known and potentially occurring special-status plants in the

¹ For the purposes of the relicensing, special-status plants include bryophytes, fungi and lichen listed as Sensitive Species by the Tahoe and Plumas national forests where these species occur on NFS land.

Project Vicinity² is available from the California Natural Diversity Database (CNDDDB) (CDFG 2011), and CNPS Inventory of Rare and Endangered Plants database (CNPS 2011), as well as TNF and PNF records. Based on this information, YCWA identified 64 plants species that are listed as special-status and have a reasonable potential to occur on the Project. Table 4.1-1 provides for each of the special-status plant species: 1) status; 2) flowering period; 3) elevation range; 4) habitat requirements; and 5) documented occurrence in the Project Vicinity. The list has been developed as a guide of species likely to occur within the Project Boundary; however, all special-status plant species located during Project surveys will be mapped and reported.

Table 4.1-1. Special-status plants known or with the potential to occur in the Project Vicinity.

Common Name/ Scientific Name	Status ¹	Flowering Period	Elevation Range (ft)	Habitat Requirements	Occurrence in Project Vicinity ²
Henderson's bent grass <i>Agrostis hendersonii</i>	FW-P CNPS 3	Apr-Jun	200-1,000	Valley and foothill grasslands, vernal pools	Present in the Project Vicinity, including Brush Creek quadrangle
Jepson's onion <i>Allium jepsonii</i>	FSS-P CNPS 1B	Apr-Aug	950-4,500	Chaparral, cismontane woodland, lower montane coniferous forest	Potential to occur in the Project Boundary
Sanborn's onion <i>Allium sanbornii</i> var. <i>congdonii</i>	FW-T FW-P CNPS4	Apr-July	950-3,250	Cismontane woodland, lower montane coniferous forest	Present in the Project Vicinity, including the Washington quadrangle
Sanborn's onion <i>Allium sanbornii</i> var. <i>sanbornii</i>	FW-T CNPS 4	May-Sept	850-5,000	Chaparral, cismontane woodland, serpentine	Present in the Project Vicinity, including the Challenge, Nevada City, Clipper Mills, Rackerby, and Washington quadrangles
True's manzanita <i>Arctostaphylos mewukka</i> ssp. <i>truei</i>	FSS CNPS 4	Feb-July	1,400-4,550	Chaparral, lower montane coniferous forest, sometimes roadside	Potential to occur in the Project Boundary
Nissenan manzanita <i>Arctostaphylos nissenana</i>	FSS CNPS 1B	Feb-Mar	1,400-3,650	Closed-cone coniferous forest, chaparral	Potential to occur in the Project Boundary
Webber's milk-vetch <i>Astragalus webberi</i>	FSS-T CNPS 1B	May-Jul	2700-4000	Lower montane coniferous forest	Potential to occur in the Project Boundary
Big-scale balsamroot <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	CNPS 1B	Mar-Jun	300-4,600	Chaparral, cismontane woodland, and valley and foothill grassland, sometimes serpentine	Present in the Project Vicinity, including the Brush Creek quadrangle
Constance's rockcress <i>Boechera constancei</i> [<i>Arabis constancei</i>]	FSS-P CNPS 1B	May-July	2,600-6,650	Chaparral, lower montane coniferous forest, upper montane coniferous forest, serpentine soils	Present in the Project Vicinity, including the La Porte quadrangle
Threadleaf beakseed <i>Bulbostylis capillaris</i>	FW-P CNPS 4	Jun-Aug	1,300-6,800	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest	Potential to occur in Project Boundary
Butte County western rosinweed <i>Calycadenia oppositifolia</i>	FSS-P CNPS 4	Apr-Jul	300-3,100	Chaparral, cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland and volcanic, granitic or serpentine soils	Potential to occur in Project Boundary
Nightblooming false bindweed <i>Calystegia atriplicifolia</i> ssp <i>buttensis</i>	FSS-P CNPS 4	May-July	1,950-5,000	Chaparral, lower montane coniferous forest, rocky soil, sometimes roadside	Potential to occur in Project Boundary

² For the purposes of the relicensing, the Project Vicinity is defined as the area surrounding the Project in the order of a county or USDOI, United States Geological Survey (USGS) 1:24,000 topographic quadrangle.

Table 4.1-1. (continued)

Common Name/ Scientific Name	Status ¹	Flowering Period	Elevation Range (ft)	Habitat Requirements	Occurrence in Project Vicinity ²
Dissected-leaved toothwort <i>Cardamine pachystigma</i> var. <i>dissectifolia</i>	FW-P CNPS 3	Feb-May	800-6,900	Chaparral, lower montane coniferous forest	Present in the Project Vicinity, including Cascade, Brush Creek, Strawberry, Camptonville and Forbestown quadrangles
Siskiyou sedge <i>Carex gigas</i>	FSS-P CNPS 4	May-July	2,350-7,700	Mesic, sometimes serpentine seeps, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest	Potential to occur in Project Boundary
Mendocino sedge <i>Carex mendocinensis</i>	FSS	May-July	500-5,250	Moist areas, often serpentine	Potential to occur in Project Boundary
Dissected-leaved toothwort <i>Cardamine pachystigma</i> var. <i>dissectifolia</i>	FW-P CNPS 3	Feb-May	800-6,900	Chaparral, lower montane coniferous forest	Present in the Project Vicinity, including Cascade, Brush Creek, Strawberry, Camptonville and Forbestown quadrangles
Red Hills soaproot <i>Chlorogalum grandiflorum</i>	FW-T CNPS 1B	May-Jun	800-3800	Chaparral, cismontane woodland, lower montane coniferous forest, serpentine or gabbro soils	Potential to occur in Project Boundary
Brandegee's clarkia <i>Clarkia biloba</i> ssp. <i>brandegeae</i>	FSS-P FSS-T CNPS 1B	May-Jul	200-3,000	Chaparral, cismontane woodland, often roadcuts	Present in the Project Vicinity, including Pike, Camptonville, Challenge, French Corral, and Oregon House quadrangles
White-stemmed clarkia <i>Clarkia gracilis</i> ssp. <i>albicaulis</i>	FSS-P CNPS 1B	May-Jul	800-3,500	Chaparral, cismontane woodland, sometimes serpentine	Present in the Project Vicinity, including the Forbestown quadrangle
Mildred's fairyfan <i>Clarkia mildrediae</i> ssp. <i>lutescens</i>	FW-P CNPS 4	Jun-Aug	900-5,750	Cismontane woodland, lower montane coniferous forest, often roadcuts	Present in the Project Vicinity, including Cascade, Clipper Mills, Bush Creek and Strawberry Valley quadrangles
Mildred's clarkia <i>Clarkia mildrediae</i> ssp. <i>mildrediae</i>	FSS-P CNPS 1B	May-Aug	800-5,600	Cismontane woodland, lower montane coniferous forest/sandy, usually granitic	Present in the Project Vicinity, including the Brush Creek quadrangle
Mosquin's clarkia <i>Clarkia mosquinii</i>	FSS-P CNPS 1B	May-Jul	600-4,000	Cismontane woodland, lower montane coniferous forest/rocky, roadsides	Present in the Project Vicinity, including Clipper Mills, Strawberry Valley, Cascade, and Brush Creek quadrangles
Branched colybia <i>Collybia racemosa</i>	FSS-T FSS-P	Fall fruiting	Unknown	Older forest habitats	Potential to occur in the Project Boundary.
Large cudonia <i>Cudonia monticola</i>	FSS-T FSS-P	Fall fruiting	Unknown	Older forest habitats	Potential to occur in the Project Boundary.
MacNab's cypress <i>Cupressus macnabiana</i>	FW-P	---	900-2,750	Chaparral, oak woodland, coniferous woodlands, serpentine or infertile soils	Potential to occur in Project Boundary
California lady's slipper orchid <i>Cypripedium californicum</i>	FW-P CNPS 4	Apr-Aug	100-9,000	Bogs and fens, lower montane coniferous forest seeps and streambanks, usually serpentine	Present in the Project Vicinity, including La Porte and Strawberry Valley quadrangles
Clustered lady's-slipper <i>Cypripedium fasciculatum</i>	FSS-T FSS-P CNPS 4	Mar-Aug	500-7200	Lower montane coniferous forest, North Coast coniferous forest, mixed conifer	Potential to occur in Project Boundary
Mountain lady's-slipper <i>Cypripedium montanum</i>	FSS-T CNPS 4	Mar-Aug	600-7500	Broad-leaved upland forest, cismontane woodland, lower montane coniferous forest, North Coast coniferous forest, mixed conifer	Potential to occur in the Project Boundary
Northern yellow lady's- slipper <i>Cypripedium parviflorum</i> var. <i>makasin</i>	CNPS 3	May-Aug	Below 4,900	Bogs and fens, meadows and seeps	Present in Project Vicinity, including the Strawberry Valley quadrangle
California pitcher plant <i>Darlingtonia californica</i>	FW-T FW-P CNPS 4	Apr-Jul	Below 8,500	Bogs and fens, meadows and seeps, generally serpentinite seeps	Present in the Project Vicinity, including the Goodyear's Bar, quadrangle

Table 4.1-1. (continued)

Common Name/ Scientific Name	Status ¹	Flowering Period	Elevation Range (ft)	Habitat Requirements	Occurrence in Project Vicinity ²
English sundew <i>Drosera anglica</i>	FW-T CNPS 2	Jun-Sep	4,250-6,650	Bogs and fens, meadows and seeps	Potential to occur in the Project Boundary
Round-leaved sundew <i>Drosera rotundifolia</i>	FW-T FW-P	Jun-Sep	Below 6,650	Bogs and fens, meadows and seeps	Potential to occur in the Project Boundary
Norris' beard moss <i>Didymodon norrisii</i>	FW-P CNPS 2	---	1,950-6,400	Cismontane woodland, lower montane coniferous forest	Potential to occur in Project Boundary
Dwarf downingia <i>Downingia pusilla</i>	CNPS 2	Mar-May	Below 1,400	Valley and foothill grassland, vernal pools	Potential to occur in Project Boundary
Clifton's eremogone <i>Eremogone cliftonii</i>	FW-P CNPS 1B	Apr-Sep	1,500-5,800	Chaparral, lower and upper montane coniferous forest/openings, usually granitic	Present in the Project Vicinity, including Cascade and Brush Creek quadrangles
Northern Sierra daisy <i>Erigeron petrophilus</i> var. <i>sierrensis</i>	FW-T CNPS 4	Jun-Oct	900-5700	Cismontane woodland, lower montane coniferous forest, upper montane coniferous forest, rocky soils	Potential to occur in the Project Boundary; present in the TNF
Ahart's sulfur flower <i>Eriogonum umbellatum</i> var. <i>ahartii</i>	FSS-P CNPS 1B	Jun-Sep	1,300-3,300	Serpentine soils	Present in the Project Vicinity, including Challenge, Cascade, and Clipper Mills quadrangles
Minute pocket moss <i>Fissidens pauperculus</i>	FSS-P CNPS 1B	---	Below 3,600	Not well known	Present in the Project Vicinity, including Cascade, Brush Creek, and Forbestown quadrangles
Pursh's buckthorn <i>Frangula purshiana</i> ssp. <i>ultramafica</i>	FSS-P CNPS 1B	May-Jul	2,700-6,350	Chaparral, lower montane coniferous forest, meadows and seeps, upper montane coniferous forest, serpentine soils	Potential to occur in Project Boundary
Butte County fritillary <i>Fritillaria eastwoodiae</i>	FSS-T FSS-P CNPS 3	Mar-Jun	150-4,900	Chaparral, cismontane woodland, lower montane coniferous forest, sometimes serpentine	Present in Project Vicinity, including Challenge, French Corral, Clipper Mills, North Bloomfield, Washington, Rackerby, Cascade, Brush Creek, Forbestown, and Nevada City quadrangles
Ahart's dwarf rush <i>Juncus leiospermus</i> var. <i>ahartii</i>	CNPS 1B	Mar-May	100-750	Valley and foothill grassland	Present in Project Vicinity, including the Loma Rica quadrangle
Dubious pea <i>Lathyrus sulphureus</i> var. <i>argillaceus</i>	CNPS 3	Apr-May	500-1,000	Cismontane woodland, upper and lower montane coniferous forest	Present in the Project Vicinity, including Rough and Ready and Wolf quadrangles
Legenere <i>Legenere limosa</i>	CNPS 1B	Apr-Jun	Below 2,900	Vernal pools	Potential to occur in Project Boundary
Cantelow's lewisia <i>Lewisia cantelovii</i>	FSS-P FSS-T CNPS 1B	May-Oct	1,000-4,500	Broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest/mesic, granitic, sometimes serpentine seeps	Present in the Project Vicinity including Pike, French Corral, Strawberry Valley, Alleghany, North Bloomfield, Washington, Goodyears Bar, Downieville, and Brush Creek quadrangles
Humboldt lily <i>Lilium humboldtii</i> ssp. <i>humboldtii</i>	FW-T FW-P CNPS 4	May-Jul	1500-3500	Chaparral, cismontane woodland, lower montane coniferous forest, openings	Present in the Project Vicinity, including the Washington quadrangle
Quincy lupine <i>Lupinus daliesiae</i>	FSS-T FSS-P CNPS 4	May-Aug	2,800-8000	Chaparral, cismontane woodland, lower montane coniferous forest, upper montane coniferous forest	Present in the Project Vicinity, including La Port and Goodyears Bar quadrangles
Bog club-moss <i>Lycopodiella inundata</i>	CNPS 2	Jun-Sept	Below 3,300	Bogs and fens, lower montane coniferous forest, marshes and swamps	Present in the Project Vicinity, including the North Bloomfield quadrangle
Elongate copper moss <i>Mielichhoferia elongata</i>	FSS-T CNPS 2	---	1,600-4,300	Vernally wet rock in cismontane woodland, metamorphic rock, usually vernal mesic	Present in the Project Vicinity, including Washington and Nevada City quadrangles

Table 4.1-1. (continued)

Common Name/ Scientific Name	Status ¹	Flowering Period	Elevation Range (ft)	Habitat Requirements	Occurrence in Project Vicinity ²
Shieldbract monkeyflower <i>Mimulus glaucescens</i>	FW-P CNPS 4	Feb-Aug	200-4,100	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland and serpentine seeps, sometimes streambanks	Potential to occur in Project Boundary
Cut-leaved monkey flower <i>Mimulus laciniatus</i>	CNPS 4	Apr-Jun	1500-9000	Chaparral, lower montane coniferous forest, upper montane coniferous forest, seeps in granite	Potential to occur in Project Boundary
Follett's monardella <i>Monardella follettii</i>	FSS-T FSS-P CNPS 1B	Jun-Sep	1,900-6,600	Lower montane coniferous forest, rocky, serpentine	Present in the Project Vicinity, including the Grass Valley quadrangle
Aquatic lichen <i>Peltigera hydrothyrea</i> [<i>Hydrothyria venosa</i>]	FSS-T FSS-P	---	1,150-7,000	Stones, boulders, and occasionally wood along streams and rivers, submerged at least part of the year	Potential to occur in Project Boundary; known to occur within 3 miles of the project area at about 3,400 feet.
Bacigalupi's yampah <i>Perideridia bacigalupi</i>	FW-P CNPS 4	Jun-Aug	1700-3500	Chaparral, lower montane coniferous forest, serpentine	Potential to occur in Project Boundary; present in the TNF
Stebbins Phacelia <i>Phacelia stebbinsii</i>	FSS-T CNPS 1B	May-Jul	2,000-6,600	Cismontane woodland; lower montane coniferous forest; meadows and seeps	Potential to occur in Project Boundary
Olive phaeollybia <i>Phaeocollybia olivacea</i>	FSS-T FSS-P	Fall fruiting	Unknown	Older forest habitats	Present in the Project Boundary, Camptonville quadrangle.
Cedar Crest popcorn flower <i>Plagiobothrys glyptocarpus</i> var. <i>modestus</i>	CNPS 3	Apr-Jun	150-2,850	Cismontane woodland, valley and foothill grassland	Present in the Project Vicinity, including Oregon House and Grass Valley quadrangles
Green- flowered wintergreen <i>Pyrola chlorantha</i>	CNPS 1A	Jun-Jul	±2,950	Lower montane coniferous forest	Present in the Project Vicinity, including the Downieville quadrangle
White beaked-rush <i>Rhynchospora alba</i>	FW-T CNPS 2	Jul-Aug	200-6700	Meadows and seeps, marshes and swamps, wet places	Potential to occur in Project Boundary; present in the TNF
Brownish beaked-rush <i>Rhynchospora capitellata</i>	FW-P CNPS 2	Jul-Aug	1,500-6,600	Upper and lower montane coniferous forest, meadows and seeps, marshes and swamps	Present in Project Vicinity, including Pike, Clipper Mills, Grass Valley, North Bloomfield, Cascade, Brush Creek, and Nevada City quadrangles
Tracy's blacksnakeroot <i>Sanicula tracyi</i>	CNPS 4	Apr-Jun	300-5,200	Cismontane woodland, lower montane coniferous forest, openings in upper montane coniferous forest	Present in Project Vicinity, including the Clipper Mills quadrangle
Swaying bulrush <i>Schoenoplectus subterminalis</i> [<i>Scirpus subterminalis</i>]	FW-P CNPS 2	Jun-Aug	2,450-7,400	Bogs and fens, marshes and swamps, montane lake margins	Potential to occur in Project Boundary
Marsh skullcap <i>Scutellaria galericulata</i>	CNPS 2	Jun-Sep	Below 6,900	Lower montane coniferous forest, meadows and seeps, marshes and swamps	Potential to occur in Project Boundary
Feather River stonecrop <i>Sedum albomarginatum</i>	FSS-P CNPS 1B	May-Jun	850-6,400	Chaparral, lower montane coniferous forest and serpentine soils	Potential to occur in Project Boundary
Lewis' groundsel <i>Senecio eurycephalus</i> var. <i>lewisrosei</i>	FSS-P CNPS 1B	Mar-Sep	900-6,200	Chaparral, cismontane woodland, lower montane coniferous forest	Potential to occur in Project Boundary
Peat moss <i>Sphagnum</i> spp.	FW-T	---	---	Fens, peatlands, and wet areas	Potential to occur in Project Boundary
Long-fruit jewelflower <i>Streptanthus longisiliquus</i>	FW-P CNPS 4	Apr-Sep	2,300-4,900	Openings in cismontane woodland lower montane coniferous forest	Potential to occur in Project Boundary
Slender-leaved pondweed <i>Stuckenia filiformis</i> [<i>Potamogeton filiformis</i>]	FW-T CNPS 2	May-Jul	950-7,050	Marshes and swamps, lakes and ponds	Potential to occur in Project Boundary

Table 4.1-1. (continued)

Common Name/ Scientific Name	Status ¹	Flowering Period	Elevation Range (ft)	Habitat Requirements	Occurrence in Project Vicinity ²
Cylindrical trichodon <i>Trichodon cylindricus</i>	FW-P CNPS 2	---	150-6,600	Broadleaf upland forest, meadows and seeps, upper montane coniferous forest/sandy, exposed soil, roadbanks	Present in the Project Vicinity, including the La Porte quadrangle
Lesser bladderwort <i>Utricularia minor</i>	FW-T CNPS 4	Jul	2,600-2,900	Bogs and fens, marshes, swamps and calcium-rich water	Potential to occur in the Project Boundary

Sources: United States Department of Agriculture, Forest Service 2010 b,c,d.

¹ Special-status:

SR: state-listed rare

SC: state candidate for listing

FPE: federally proposed endangered

FPT: federally proposed threatened

CNPS: California Native Plant Society listed species

1A: Species presumed extinct in California

1B: Species considered rare or endangered in California and elsewhere (no legal protection)

2: Species considered rare or endangered in California but more common elsewhere (no legal protection)

3: More information needed about this species

4: Limited distribution; watch list

FSS: United States Forest Service Sensitive Species (FSS-P: Plumas National Forest; FSS-T: Tahoe National Forest) (USDA-FS 2010b,c)

FW: United States Forest Service Watchlist Species (FW-P: Plumas National Forest; FW-T: Tahoe National Forest) (USDA-FS 2010b,d)

² Occurrence in Project Vicinity results based on a CNPS quadrangle search.

None of the available CNDDDB reports are from surveys within the existing FERC Project Boundary.³

Additional information is needed to address the study goal is the specific location of special-status plants in relation to Project facilities, normal Project O&M activities, Project recreation, and any other Project-related activities that might affect special-status plants.

4.2 Incidental Observations

4.2.1 Noxious Weeds

Documentation of existing occurrences of noxious weeds in the Project Area was not available. Potential noxious weed occurrences are listed in Table 4.2-1 (USDA-NRCS 2009, Cal-IPC 2006). A total of 36 noxious weeds have the potential to occur within the Project Vicinity.

Table 4.2.1-1. Noxious weeds and other invasive species of concern to the Forest Service potentially occurring in the Project Vicinity.

Common Name/ Scientific Name	Cdfa Status ¹	Flowering Period	Elevation (ft)	Habitat
Russian knapweed <i>Acroptilon repens</i> [<i>Centaurea repens</i>]	B	May-Sept	Below 6,200	Fields, roadsides, cultivated ground, disturbed areas
Barb goatgrass <i>Aegilops triuncialis</i>	B	May-Aug	Below 3,300	Disturbed sites, cultivated fields, roadsides
Tree-of-heaven <i>Ailanthus altissima</i>	C	May-Jul	Below 6,100	Disturbed areas, roadsides, and urban waste areas

³ The existing FERC Project Boundary is the area that Licensee uses for normal Project operations and maintenance, and is shown on Exhibits J, K, and G of the current license.

Table 4.2.1-1. (continued)

Common Name/ Scientific Name	CDFA Status ¹	Flowering Period	Elevation (ft)	Habitat
Giant reed <i>Arundo donax</i>	B	Mar-Nov	Below 1,700	Riparian areas, floodplains, and ditches
Cheatgrass <i>Bromus tectorum</i>	Not rated	May-June	Below 6,000	Fields, roadsides, cultivated ground, disturbed areas
Plumeless thistle <i>Carduus acanthoides</i>	A	May-Aug	Below 4,300	Roadsides, pastures, waste areas
Musk thistle <i>Carduus nutans</i>	A	Jun-Jul	330-4,000	Roadsides, pastures, waste areas
Italian thistle <i>Carduus pycnocephalus</i>	C	May-Jul	Below 3,300	Roadsides, pastures, waste areas
Woolly distaff thistle <i>Carthamus lanatus</i>	B	July-Aug	Below 3,600	Disturbed sites
Purple starthistle <i>Centaurea calcitrapa</i>	B	Jul-Oct	Below 3,300	Disturbed areas
Diffuse knapweed <i>Centaurea diffusa</i>	A	Jun-Sep	Below 7,600	Fields, roadsides
Spotted knapweed <i>Centaurea maculosa</i>	A	July-Aug	Below 8,500	Open disturbed sites, grasslands, forested areas, roadsides
Maltese starthistle <i>Centaurea melitensis</i>	C	Apr-July	Below 7,200	Open disturbed sites, grasslands, roadsides, waste places
Yellow starthistle <i>Centaurea solstitialis</i>	C	Jun-Dec	Below 4,300	Pastures, roadsides, disturbed grassland or woodland
Rush skeletonweed <i>Chondrilla juncea</i>	A	May-Dec	Below 2,000	Disturbed areas
Canada thistle <i>Cirsium arvense</i>	B	Jun-Sep	Below 5,900	Disturbed areas
Bermudagrass <i>Cynodon dactylon</i>	C	Jun-Aug	Below 3,000	Disturbed areas
Scotch broom <i>Cytisus scoparius</i>	C	Mar-Jun	Below 3,300	Disturbed areas
Oblong spurge <i>Euphorbia oblongata</i>	B	Apr-Aug	Below 3,300	Waste areas, disturbed sites, roadsides, fields
Japanese knotweed <i>Fallopia japonica</i>	B	Aug-Oct	Below 3,300	Disturbed areas
Sakhalin knotweed, giant knotweed <i>Fallopia sachalinensis</i>	B	Jul-Oct	Below 1,650	Disturbed areas
French broom <i>Genista monspessulana</i>	C	Mar-May	Below 1,600	Disturbed areas
English Ivy <i>Hedera helix</i>	Not rated	Autumn	Below 3,300	Disturbed forests, woodlands, and riparian areas
Hydrilla <i>Hydrilla verticillata</i>	A	Jun-Aug	Below 650	Ditches, canals, ponds, reservoirs, lakes
Dyer's woad <i>Isatis tinctoria</i>	B	Apr-Jun	Below 3,300	Roadsides, fields, disturbed sites
Lens-podded white-top <i>Lepidium draba</i> ssp. <i>chalepense</i>	B	Apr-Aug	Below 5,000	Disturbed, generally saline soils, fields
Perennial pepperweed, tall white-top <i>Lepidium latifolium</i>	B	Apr-Aug	Below 6,300	Beaches, tidal shores, saline soils, roadsides
Dalmation toadflax <i>Linaria genistifolia</i> ssp. <i>dalmatica</i>	A	May-Sep	Below 3,300	Disturbed places, pastures, fields
Purple loosestrife <i>Lythrum salicaria</i>	B	Jun-Sep	Below 5,300	Seasonal wetlands, ditches, cultivated fields
Eurasian water milfoil <i>Myriophyllum spicatum</i>	C	July-Sep	Below 6,300	Fresh to brackish water, slow-moving streams
Scotch thistle <i>Onopordum acanthium</i>	A	Jul-Sep	Below 5,300	Disturbed areas
Himalayan blackberry <i>Rubus discolor</i>	Not rated	May-Sep	Below 5,300	Disturbed moist sites, fields, roadsides, riparian areas
Spanishbroom <i>Spartium junceum</i>	Not rated	Mar-Jun	Below 2,000	Open disturbed sites, grasslands, oak woodlands, riparian corridors, open forests
Medusahead <i>Taeniatherum caput-medusae</i>	C	Apr-Jul	Below 6,900	Disturbed sites, grassland, openings in oak woodlands and chaparral

Table 4.2.1-1. (continued)

Common Name/ Scientific Name	CDFA Status ¹	Flowering Period	Elevation (ft)	Habitat
Gorse <i>Ulex europaeus</i>	B	Nov-Jul	Below 1,300	Disturbed areas

Sources: CDFA 2009; United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) 2009; California Invasive Plant Council (Cal-IPC) 2006; DiTamaso 2007; USDA Forest Service 2010 a,e.

¹ CDFA Status:

A = Eradication, containment, rejection, or other holding action at the state-county level. Quarantine interceptions to be rejected or treated at any point in the state.

B = Eradication, containment, control, or other holding action at the discretion of the commissioner. State endorsed holding action and eradication only when found in a nursery.

C = Action to retard spread outside of nurseries at the discretion of the commissioner; reject only when found in a crop seed for planting or at the discretion of the commissioner (CDFA 2009).

4.2.2 Tahoe and Plumas National Forests' Watchlist Plant Communities

YCWA will also record incidental observations of Tahoe and Plumas National Forests' Watchlist plant communities including peatlands, fens, seeps, and springs will also be recorded; occurrence information will be included in YCWA's Wetlands Study 6.3.

5.0 Study Methods and Analysis

5.1 Study Area

The study area consists of the area within the existing FERC Project Boundary. This includes all Project facilities and features (e.g., dams, powerhouses and reservoirs) as well as Project recreation areas. The study area will also include a buffer of 100 feet extending upslope from the high-water mark of the Project reservoirs and from the FERC Project Boundary around Project recreation facilities.

If YCWA proposes an addition to the Project, the study area will be expanded if necessary to include areas potentially affected by the addition.

5.2 General Concepts and Procedures

The following general concepts and practices apply to the study:

- Personal safety is the most important consideration of each fieldwork team.
- Licensee will make a good faith effort to obtain permission to access private property where needed well in advance of entering the property.
- Field crews may make minor variances to the FERC-approved study in the field to accommodate actual field conditions and unforeseen problems. When minor variances are made, Licensee's field crew will follow the protocols in the FERC-approved study.
- When Licensee becomes aware of major variances to the FERC-approved study, Licensee will issue an e-mail to the Relicensing Contact List describing the variance and reason for the variance. Licensee will contact by phone the Forest Service (if the variance is on National

Forest System land), USFWS, SWRCB and CDFG to provide an opportunity for input regarding how to address the variance. Licensee will issue an e-mail to the Relicensing Contact List advising them of the resolution of the variance. Licensee will summarize in the final study report all variances and resolutions.

- Licensee's performance of the study does not presume that Licensee is responsible in whole or in part for measures that may arise from the study.
- Global Positioning System (GPS) data will be collected using either a Map Grade Trimble GPS (sub-meter data collection accuracy under ideal conditions), a Recreation Grade Garmin GPS unit (3 meter data collection accuracy under ideal conditions), or similar units. GPS data will be post-processed and exported from the GPS unit into Geographic Information System (GIS) compatible file format in an appropriate coordinate system using desktop software. The resulting GIS file will then be reviewed by both field staff and Licensee's relicensing GIS analyst. Metadata will be developed for deliverable GIS data sets. Upon request, GIS maps will be provided to agencies in a form, such as ESRI Shapefiles, GeoDatabases, or Coverage with appropriate metadata, that is useful for interactive data analysis and interpretation. Metadata will be Federal Geographic Data Committee (FGDC) compliant.⁴
- Licensee's field crews will record incidental observations of aquatic and wildlife species observed during the performance of this study. All incidental observations will be reported in the appropriate Licensee report (e.g., incidental observations of special-status fish recorded during fieldwork for the Special-Status Turtles – Western Pond Turtle Study will be reported in Licensee's Stream Fish Populations Study report). The purpose of this effort is not to conduct a focus study (i.e., no effort in addition the specific field tasks identified for the specific study) or to make all field crews experts in identifying all species, but only to opportunistically gather data during the performance of the study.
- Field crews will be trained on and provided with materials (e.g. Quat) for decontaminating their boots, waders, and other equipment between study sites. Major concerns are amphibian chytrid fungus, and invasive invertebrates (e.g. zebra mussel, *Dreissena polymorpha*). This is of primary importance when moving: 1) between tributaries and mainstem reaches; 2) moving between basins (e.g. Middle Yuba River, Yuba River, and North Yuba River); and 3) moving between isolated wetlands or ponds and river or stream environments.

5.3 Methods

Study methods will consist of the following five steps: 1) gather data and prepare for field effort; 2) conduct field surveys; 3) prepare data and quality assure/quality control (QA/QC) data; 4) consult with YCWA's Project operations staff; and 5) prepare report. Each step is described below.

⁴ The Forest Service and CDFG each have requested that a copy of the GIS maps be provided to them when the maps are available.

5.3.1 Step 1 – Gather Data and Prepare for Field Efforts

YCWA will identify and map known occurrences of special-status plants within the study area, and prepare field maps for use by survey teams. The maps will include aerial imagery, Project features, and known special-status plant occurrences. Survey timing will be planned based on herbarium collection dates.

5.3.2 Step 2 – Conduct Field Surveys

YCWA’s surveyors will conduct special-status plant surveys as outlined in the “Botanical Survey” section of the California Department of Fish and Game’s (CDFG) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009)⁵. Surveys will be comprehensive over the entire study area using systematic field techniques to ensure thorough coverage, with additional efforts focused in habitats with a higher probability of supporting special-status plants (e.g., serpentine outcrops). Surveys will be floristic in nature, documenting all species observed; taxonomy and nomenclature will be based on *The Jepson Manual* (Hickman 1993).

When special-status plants are documented within the study area, the following information will be collected:

- Digital photographs, if needed, to describe the occurrence, its habitat, and any potential threats (at least one digital photograph will be collected for each occurrence, with other photographs to document potential threats, or as needed)
- Estimated area (approximate length and width) covered by the special-status plant population and estimated number of individual plants in the population. If plant population is estimated to cover an area greater than 0.1 acre, surveyors will delineate the occurrence boundary using a handheld GPS, collecting either polygon data, or sufficient point data that a realistic occurrence polygon can be constructed from the point data using GIS. For occurrences less than 0.1 acre in size, the location of the approximate center of the occurrence will be taken as point data using a handheld GPS unit
- Dominant and subdominant vegetation in the area
- Estimated distance to nearest Project facility, feature, or Project-related activity
- Activities observed in the vicinity of the population that have a potential to adversely affect the population (e.g., recreational trails and uses)
- Estimated phenology and descriptions of reproductive state.

Surveys for fungi listed as Forest Sensitive will not be conducted due to unpredictable seasonal and annual variations in fruiting timing, although any incidental findings of the fungi on NFS land will be recorded and mapped. In particular, YCWA will include in its analysis and maps locations of olive phaeocollybia on NFS land in Dark Day Campground if the GPS locations of

⁵ Replaces the CDFG’s *Guidelines for Assessing the Effects of Proposed Project on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFG 2000).

the occurrences are provided by the Forest Service. Special surveys, including verification of the locations as provided by the Forest Service will not be conducted as part of the study.

YCWA's noxious weed field surveys will be conducted in conjunction with special-status plants surveys when feasible, but are expected to require revisits to account for differences in plant phenology. For the purpose of the study, noxious weeds are defined as those plant species listed as "A," "B" or "C" by the California Department of Food and Agriculture (CDFA). Other invasive species to be recorded include species of concern to TNF and PNF that are not rated by the CDFA. Weed data collection and reporting will be consistent with Section 2083 of the Forest Service Manual, Information and Reporting Guideline for Noxious Weeds (USDA Forest Service 1995). Two forms of noxious weed data will be collected and maintained, depending on the type and distribution of weeds located during survey efforts:

- Quantitative data: for discrete occurrences of weeds, data collected will include species, GPS-derived location, nearby sources of dispersal (e.g., roads), surrounding vegetation composition, and any nearby resource concerns (e.g., special-status plant occurrences), and an estimate of area covered. If a noxious weed population is identified on the perimeter of the FERC Project Boundary the extent of the population extending beyond the boundary will be estimated. Levels of infestation will be reported by weed cover within the following classes: Low (<5% cover), Moderate (6-25% cover), and High (>25% cover).
- Qualitative data: for widespread weeds, or for those weeds for which detailed mapping is unlikely to remain accurate (e.g., annual grasses, which change distributions yearly), the YCWA will describe general distribution and extent within the study area.

5.3.3 Step 3 – Prepare Data and Quality Assure/Quality Control Data

Following field surveys, YCWA will develop GIS maps depicting special-status plant and incidental occurrences of noxious weeds, and Forest Service Sensitive Fungi, Project facilities, features, and specific Project-related impacts (e.g., dispersed use camping) and other related information collected during the study. Field data will then be subject to QA/QC procedures, including spot-checks of transcription and comparison of GIS maps with field notes to verify locations of mapped occurrences.

5.3.4 Step 4 – Consult with Licensee's Project Operations Staff

Once the locations of occurrences in the study area are defined, Project operations staff will be consulted to identify Project O&M and Project-related activities that typically occur in the area of the special-status plant populations and incidental occurrences that have a potential to adversely affect the special-status species populations.

5.3.5 Step 5 – Prepare Report

YCWA will prepare a report that includes the following sections: 1) Study Goals and Objectives; 2) Methods; 3) Results; 4) Discussion; and 5) Description of Variances from the FERC-approved study proposal, if any. Study results will be displayed in GIS maps that show each special-status

plant population location in respect to project facilities and features. The GIS layer of all mapped occurrences will be made available to the appropriate land management agencies. In addition, YCWA will develop a GIS layer for of all mapped occurrences and make this available to the appropriate land management agencies.

For all special-status plant observations, YCWA will complete the appropriate CNDDDB form and transmit the form to the CNDDDB. For any special-status plant observations on NFS land, YCWA will provide a copy of the CNDDDB forms or spreadsheets to the Forest Service at the same time as it is submitted to CNDDDB.

6.0 Study-Specific Consultation

This study does not require any study-specific consultation.

7.0 Schedule

YCWA anticipates the schedule to complete the study as follows assuming FERC issues its Study Determination by September 16, 2011 and the study is not disputed by a mandatory conditioning agency:

Planning (Step 1).....	October 2011- February 2012
Collect Data (Step 2).....	October 2011- August 2012
QA/QC Review (Step 3).....	August 2012
Operations Staff Consultation (Step 4)	August 2012
Study Report Preparation (Step 5)	September 2012

8.0 Consistency of Methodology with Generally Accepted Scientific Practices

This study is consistent with the goals, objectives, and methods outlined for most recent FERC hydroelectric relicensing efforts in California, and uses standard botanical survey methods as defined by the CDFG.

9.0 Level of Effort and Cost

YCWA estimates the cost to complete this study in 2011 dollars is between \$370,000 and \$500,000.

10.0 References Cited

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