BIOLOGICAL SURVEY REPORT
Pipeline Project

Application 31491 – G. Scott Fahey

SUGAR PINE SPRING WATER PIPELINE
Stanislaus National Forest
Mi Wok Ranger District

Tuolumne County, California
November 2008
Revised May 2010

Prepared for:

State Water Resources Control Board
Division of Water Rights
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PROJECT LOCATION

The project is located approximately 4.5 air-miles southeast of Long Barn (on Highway 108) on the Stanislaus National Forest in portions of Sections 14, 15, 22, 23, 26 and 27, T2N, R17E, MDBM (Hull Creek and Duckwall Mountain 7 ½' Quadrangles). The Project is within Tuolumne County but is not under county jurisdiction (see Vicinity Map, Appendix A).

PROJECT DESCRIPTION

The Applicant, G. Scott Fahey, (State of California, State Water Resource Control Board, Application to Appropriate Water No. 31491) is applying for water rights to divert water from two (2) unnamed springs to the Applicant's existing permitted point of use (POU), (Application to Appropriate Water No. 29977 thence Water Rights Permit No. 20784). Additionally, as required by the Federal Land Management Act (FLMA), the Applicant has applied to the Stanislaus National Forest (SNF) for a special use-permit to allow the construction of a 3" diameter pipeline to convey water from the springs to an existing permitted (Water Rights Permit No. 20784) water diversion.

The two springs located within 1/4 mile of each other along a common east-facing slope are unnamed. For purposes of this permit application, the spring to the north is called "Marco" and the spring to the south is called "Polo."

Each of the diversions from Marco and Polo springs will be accomplished by means of sub-horizontal wells that will penetrate the root source of each spring to intercept a portion of the spring flow before it reaches the surface. The amount of water flowing from each well will be controlled and monitored at the collar by valves and flow meters (Grunwald 2007). Figure 1 provides a conceptual illustration.

G. Scott Fahey proposes to extract a maximum of 20 gallons per minute from each of the springs known as Marco and Polo (as measured at RR Grade sample point), located in Tuolumne County, California. This volume equates to a total 32.25 acre-feet annually from each spring. Water piped up from beneath the two developed springs will be conveyed through a pipeline that will be installed along an old railroad grade and introduced into the pipeline that receives the diversions from two other springs under current permit.

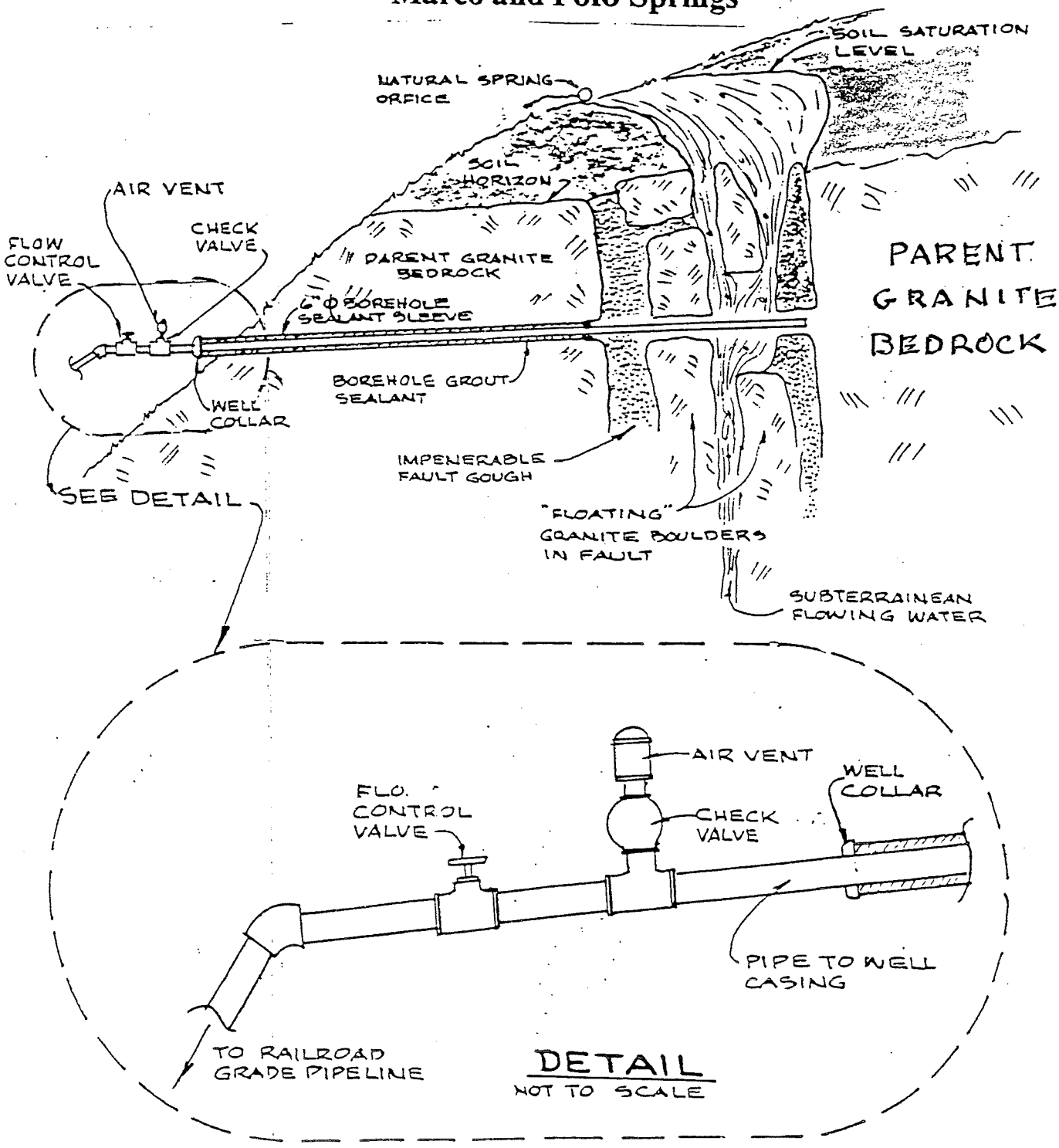
G. Scott Fahey is currently permitted to draw 14 gallons per minute (22.6 acre-feet/year) of surface flow from each of two springs, Deadwood and Sugar Pine (Application No. 29977), Water Rights Permit 20784).

Water flowing from Marco and Polo springs is transported approximately 5 miles along an existing historic railroad grade to a point near Cottonwood Creek. At the point east of Cottonwood Creek, the Marco-Polo water line joins an existing diversion pipeline from Sugar Pine spring. The water then flows through an existing pipeline that, in succession, joins a second existing diversion pipeline from Deadwood Spring. The water from (at this point) the four springs is transported through a common existing pipeline to a tank where

Figure 1

CONCEPTUAL TYPICAL SECTION

SUB-HORIZONTAL WELL
Marco and Polo Springs



it is stored until transported by tanker trucks to a bottling plant.

Water withdrawn from these springs will be for human consumption, as sold by various vendors and marketed as bottled spring water.

The intent of the project is to supplement the withdrawals of water from Deadwood Creek and Sugar Pine Spring with that from Marco and Polo Springs. ***G. Scott Fahey is currently permitted to draw 14 gallons per minute (22.6 acre-feet/year) of surface flow from each of two springs, Deadwood and Sugar Pine (Application No. 29977), Water Rights Permit 20784).*** Consequently any effects that withdrawals currently have from Deadwood and Sugar Pine waters may be minimized by obtaining water from Marco Polo Springs.

The flow from Marco spring discharges into Hull Creek at a point approximately 0.5 miles upstream from the inflow of Polo spring, when measured along the course of Hull Creek. Hull Creek discharges into the Clavey River approximately 2.5 miles below the inflow of Polo spring. The Clavey River is a tributary of the Tuolumne River. The Tuolumne River eventually runs into the Don Pedro Reservoir where flows are controlled. The withdrawals from Marco and Polo springs will only impact the watershed above the Don Pedro Reservoir.

Withdrawals made from the Tuolumne River basin that are made by Mr. Fahey from Deadwood Creek and Sugar Pine Spring are replaced by water purchased from an out-of-basin source and discharged into the Tuolumne River basin from Phoenix Reservoir. This discharged water flows down Sullivan Creek, into Woods Creek, and enters the Tuolumne River at Don Pedro Reservoir. As a result of this water replacement, there is presently no net effect on the Tuolumne River watershed as a whole, and there will also be no net effect as a result of the proposed project.

There are two locations along the proposed pipeline between Polo Spring and Cottonwood Creek where special consideration will have to be a given to the pipeline location. At a point approximately 1,000 feet downslope from the POD at Polo Creek, the pipeline must be bored under an unnamed creek, **for the purpose of this permit application "Burney Creek"**. This special effort is designed to avoid impacts to the intermittent stream. Pipeline tractors will bore from one side then move to the other side by existing forest roads.

The second location is at a spring within 200 feet of the termination of the proposed pipeline near Cottonwood Creek. At this point the project plan is to either drill horizontally under the spring or bring the pipeline above (upslope) of the spring and its adjacent wetland.

The basic assumption for the project design is that subterranean flowing water diverted from beneath the Marco Spring and the Polo spring will not change the flow from the natural spring orifice during the plant growing season. Therefore, the biological survey will assume two levels of effect from the proposed pipeline project:

- Level 1: Direct effects are expected to begin at the well collar of each sub-horizontal well (Point of Diversion shown on the Biological Resources Map, Appendix A) and continue downslope from each spring to the railroad grade (RR Grade); then, continue along RR Grade to the end of the project.

  The direct effects to biological resources are designed to be minimal and are limited to a 20-ft-wide maximum equipment-operating area along the pipeline route. Once the pipeline is installed and

covered over, there should be no more effect to the surface resources (experience with the existing Sugar Pine Spring system confirms that the pipeline route has no maintenance requirements).

There are possible temporary construction effects which will be scheduled so as to have a less-than-significant impact on biological resources. Construction work shall be scheduled between August and March in the following locations:

☐ Spotted Owl LOP shown on the Biological Resources Map

☐ Old Growth Tree/snag nesting sites for special-status bats and nesting birds as flagged by Project Biologist.

- Level 2: Indirect effects could occur beginning at the spring orifice (by a reduction in flow) and could continue down the stream and riparian zone to the RR Grade if there was no regulation of the diversion amounts.

Since the design assumption is to **regulate diversion timing and amounts in such a way that spring flows are not changed** during the plant growing season, the project design objective is to regulate diversions such that only excess flows are diverted. The project design result is to maintain aquatic habitat, wetland characteristics and a riparian environment as it exists before the project.

Based on design assumptions and objectives, the "Project Area" will be limited to a direct effect area of 20 feet wide from well collar at each spring to the RR Grade, then along the RR Grade to the end of project. In addition, an indirect-effect-area beginning at Marco Spring and extending downstream to the "falls", then beginning at Polo Spring and extending downstream to the RR Grade will be considered as a "**Riparian Community Monitoring Area**" within which it is expected there will be a less-than-significant impact to existing riparian habitat.

SITE DESCRIPTION

The general habitat type of the overall project area (from spring diversions through water-transport lines) is the Sierran Mixed Conifer (Mayer 1988). Beginning at the **Marco Point of Diversion** (Appendix A, Biological Resources Map), the pipeline route goes through dense young-growth Sierra Mixed Conifer (Appendix G; Photo 1) with a sub-climax association of Montane Chaparral (Mayer 1988). Due to the dense understory, the herbaceous groundcover is limited to scattered populations of shade-tolerant species. As the pipeline route continues downslope to the RR Grade a distance of approximately 1,000 ft., it passes through a large rock-outcropping area. The rock area is dominated by Montane Chaparral. For the last 100 feet before reaching the RR Grade, the habitat becomes an open Sierra Mixed Conifer stand with scattered understory of reproduction and Montane Chaparral.

Beginning at the **Polo Point of Diversion** (POD), the pipeline route runs downslope along a skid trail which borders a cut-over area of Sierra Mixed Conifer (Photo 2). At 950 ft. downslope from the Polo POD, the pipeline will be bored under Burney Creek then continue downslope in SMC habitat which exhibits an open understory and a thick layer of duff (leaf litter). At Station 1,700 ft. from the POD, the pipeline route intersects with the RR Grade.

The RR Grade Stations begin (0+00) at the junction with Marco pipeline route (a length of 1,200 ft.). The

RR Grade pipeline route traverses the abandoned RR Grade segment (now a traveled road) from 0+00 to 26+00 which is the junction with Polo pipeline. From RR Grade Sta. 26+00 the pipeline route continues on the abandoned grade to Sta. 98+00. This RR Grade segment 0+00 to 98+00 passes through SMC habitat and exhibits young woody-plant-growth (shrubs and trees) which are reclaiming the RR Grade cut-and-fill banks. The species mix along the pipeline (20' wide) route includes tree, shrub and herbaceous plant species which typically serve as the subclimax vegetation (Photo 3).

The pipeline route continues down the middle of the traveled road for approximately 1.5 miles to Sta. 159+00 (see typical RR Grade/road pipe location as Photo 4). From Sta. 159+00 to approximately 235+00 the pipeline route continues to follow the RR Grade. At Sta 235+00 to 237+00 the route passes around a seepage habitat which sinks or swells in width according to the time of year (see typical habitat in Photo 5). Wetland is avoided by the pipeline.

The **"Riparian Community Monitoring Area"** is spring/stream area outside of the Project Area. The Monitoring Area is established with an intensive survey which resulted in specific plant communities described by Plant Ecologist Potter. The plant communities are a riparian-based subset of the Sierra Mixed Conifer (Mayer 1988).

The two streams are to be studied from each respective spring to the points designated in State Water Resources Control Board Letter of November 19, 2007, by Lauren Daily:

- ☐ Marco Spring downstream to "waterfall" (a steep-gradient portion densely vegetated with alder);
- ☐ Polo Spring downstream to "railroad berm" culvert entrance.

The riparian vegetation along both drainages is primarily composed of forested communities. In the Polo section one small meadow and one small pond occur; the Marco section begins with a very small meadow complex. In addition, several small seeps occur adjacent to and flow into each section. Otherwise, the riparian forests are quite narrow. They generally range between only 5-to-10-feet on each side of the stream before transitioning to upland forests. The vegetation occupying each of these settings are long-term, stable communities (see Plant Habitat Maps in Pouches A and B).

Soils of the spring-stream study area are primarily alluvial and colluvial of granitic origin. Riparian trees growing upslope from the stream channel and flood plain are on forest soils with characteristics of the Holland sandy clay loam (USDA 2005). Specific soil habitats along the stream channels under study vary from sand deposits to silt-laden deposit areas where water has pooled in the past.

Elevations of the spring-stream study area range from 5,000 ft. up to 5,400 ft., where precipitation occurs primarily as rain. Most of the dry season flow comes from underground sources above and adjacent to the two stream sections. Both drainages have a history of forest disturbances resulting from the stand recovering from fires, logging, road construction, reforestation, cattle grazing, and ATV use. Disturbance from insect and disease appears to remain at endemic levels, and flooding events in both drainages appear to be rare.

Soils along the railroad grade pipeline route are subsoils of granitic origin. The soil structure ranges from sandy loam to gravely or stony, sandy loam. Soils are well-drained. The pipeline ditch will be excavated down the middle of the railroad grade/road and, therefore, will only impact the subsoil material.

The "dominant tree layer" of the Riparian Community Monitoring Area (Marco Spring to RR Grade and Polo Spring to RR Grade) is the *Abies concolor-Calocedrus decurrens - Alnus rhombifolia* complex (see Photo

2 and Appendix E, Table E-1, Greenline Method). Beneath the main tree layer are communities of understory trees (*Alnus rhombifolia*) and shrubs (*Rhododendron occidentalis*) (Photo 6) with dominant herbaceous communities such as the grass-sedge-rush complex of the mid-elevation riparian gramineous vegetation (Photo 7) and the shrub/perennial vegetation association of *Rhododendron occidentalis* and *Athyrium filix-feminia* (lady fern) (Photo 8).

Each of the specific plant communities which have been inventoried and are planned for monitoring are described in Table E-1 (Appendix E), and outlined under the Results Section of this report.

QUALIFICATIONS

Special Permits

No special permits were required for species listed under the state and federal Endangered Species Act since it was determined that there was/is no habitat for those species.

Preparers of this document and participants in surveys (see Table 1)

Principal Biologist: Michael W. Skenfield; B.S. Forest Sciences and Botany, University of California, Berkeley 1963. Mr. Skenfield is the principal biologist for his firm (Michael W. Skenfield Biological Consultant) with over 35 years of professional experience in the field of natural resource inventories in Northern California. He has conducted wetland delineations since 1988 and Natural Environmental Studies since 1990.

Mr. Skenfield is a Professional Wetland Scientist (SWS #1027) and a Registered Professional Forester (State of California No. 1597). He holds certificates for Habitat Evaluation Procedures, U.S. Fish and Wildlife Service 1988 and California Wildlife Habitat Relationships System, California Department of Fish and Game April 14, 1995. Mr. Skenfield is qualified to conduct protocol surveys for special-status species encountered in the Central Sierra Nevada Region or he utilizes associates with the necessary qualifications.

Mr. Skenfield conducted rare plant surveys and wildlife habitat surveys in 2005 along the entire length of the proposed pipeline. In 2008 he and his associates conducted rare plant surveys and wildlife habitat surveys and Wetland Delineation in the spring/stream basins of Marco and Polo Springs. Mr. Skenfield is the principal author of the Biological Survey Report, Sugar Pine Spring Water Pipeline, November 2008 (revised March 2010).

Raptor Biologist: Thomas W. Beck, BA in Biology/Wildlife Management, Humboldt State University. Served in wildlife habitat positions on the Stanislaus National Forest 1969-1984. In 1984 became Forest Wildlife Biologist, Stanislaus National Forest until 1998. Retired from the Forest Service and now serves as a Consulting Wildlife Biologist. Mr. Beck is a published authority on sensitive raptor species in the Sierra Nevada.

Herpetologist: Harold E. Basey is a certified botanical and wildlife consultant in Tuolumne County. He holds BA and MA degrees in Biology. In the 1970's Mr. Basey was selected as research scientist by the U. S. Forest Service to lead studies of the amphibian and reptile species in the Sierra Nevada. The study resulted in the amphibian-reptile portion of California Wildlife and Their Habitats, Western Sierra Nevada, U.S. Forest Service General Technical Report PSW-37, 439 pp. Mr. Basey conducted a survey for amphibians in the Marco and Polo Springs and Streams (see Appendix D).

Bryophyte Botanist: David Toren is a bryophyte (mosses and liverworts) expert to the U.S. Forest Service. Mr. Toren was recommended by Margaret Willits, Area Botanist for the Stanislaus National Forest. He identified all mosses, liverworts and lichen collected by the Skenfield-Potter team on the pipeline route and within the Marco and Polo streams.

Field Technician: Beatrice Hollars, Field Assistant to Michael W. Skenfield Biological Consultant. Ms. Hollars has

trained under Mr. Skenfield in the application of each of his qualifications for over 20 years. She is an experienced "birder" and is qualified in the application of field procedures for floristic surveys, wildlife habitat surveys and wetland delineation. Ms. Hollars assisted Mr. Skenfield in all field surveys.

Plant Ecologist: Donald Potter, retired as Province Ecologist for the Sequoia, Sierra and Stanislaus National Forests. Mr. Potter is the author of Forested Communities of the Upper Montane in the Central and Southern Sierra Nevada (Potter 1998). Potter assisted Skenfield with sensitive (rare) plant species surveys in the Marco and Polo drainages. Mr. Potter directed the Baseline Survey for the Monitoring Plan (see his report in Appendix E).

Report Editor, Word Processor: Janet C. Skenfield, Office Assistant to Michael W. Skenfield Biological Consultant. Mrs. Skenfield has kept current with Corel WordPerfect and Microsoft Word word processing systems and has edited reports for the firm for over 25 years.

Draftsperson: Gail A. Forrester, Drafting Assistant to Michael W. Skenfield Biological Consultant. Ms. Forrester has over 25 years of experience with technical map production. Ms. Forester assisted with draft maps.

METHODOLOGY

Pre-survey data-base search and review was accomplished by Principal Biologist Skenfield prior to the 2005 surveys, then again prior to the 2008 surveys. A pre-survey meeting was held with Area Botanist Margaret Willits of the Stanislaus National Forest on May 25, 2005 (see Table 1 under this section).

The California Native Plants (CNPS) data base information was added to from the Stanislaus National Forest Sensitive (Rare) Plants List and Watch-list. Botanist Margaret Willits provided additional species which may also be present. Table 2 was produced to provide tabular information on plant name, legal status, habitat requirements and a column for deciding on the presence or absence of the required habitat. Table 2A was produced to show that elevation range and dates-of-survey fit the plants with possible habitat.

A notebook containing pictures and descriptions of each rare plant was taken to the field. Complete floristic surveys (CDFG 2000) were conducted by Skenfield and Field Assistant Hollars along the pipeline route (Marco POD to RR Grade and Polo POD to RR Grade, and RR Grade 0+00 to End of Pipeline at 237+00). An approximately 20-ft.-wide strip was used for the survey width and 100% coverage was given to that area. The survey along the traveled-road portion of the RR Grade was widened to include each bank of the road. A complete list of plants identified in 2005 along the pipeline route (see Appendix A, Project Map) and during surveys on the Marco and Polo Monitoring Area in 2008 is found in Appendix B-1.

Sensitive wildlife species for which habitat could be present on the pipeline project were placed on Table 3 by Wildlife Biologist Tom Beck. Mr. Beck gathered his information by (1) reviewing the California Natural Diversity Data Base (CNDDB 2008) and by reviewing local data on the Stanislaus National Forest Atlas (Mi Wok District in-house document).

The following species' habitat locations were studied by Beck:

- ☐ **California spotted owl** (*Strix occidentalis occidentalis*), Stanislaus National Forest (SNF) Sensitive Species.
- ☐ **Northern goshawk** (*Accipiter gentilis*), SNF Sensitive Species.
- ☐ **Great gray owl** (*Strix nebulosa*), state Endangered and SNF Sensitive Species.
- ☐ **Sierra Nevada red fox** (*Vulpes vulpes necator*), a state Threatened and SNF Sensitive Species
- ☐ **Snowshoe hare** (*Lepus americanus*), a California Dept. of Fish and Game Species of Special Concern

☐ **Pacific fisher** (*Martes pennanti*), a federal Candidate species and a SNF Sensitive Species
☐ **Wolverine** (*Gulo gulo*), a state Threatened and SNF Sensitive Species

Mr. Beck also assisted Principal Biologist Skenfield with the development of Table 3 (Special-status Animals with Possible Habitat on the Project Site). Biologist Beck completed his work by creating a map of the Spotted Owl Protected Activity Center (PAC), dates for the Limited Operating Period (LOP) [see Biological Resources Map, Appendix A, and Mr. Beck's report in Appendix C].

Wildlife Biologist Harold Basey conducted a habitat survey along Marco and Polo streams (within the study area) for amphibian habitat. Dates and time is provided in Table 1. Mr. Basey's report is found in Appendix D.

Plant Ecologist Don Potter assisted with plant surveys along the monitoring area of the streams of Marco and Polo Springs. Potter, Skenfield and Hollars all participated in a "Greenline" survey of each stream in order to establish a baseline from which monitoring can continue after the pipeline is in operation (see Monitoring Plan, Appendix E).

The Greenline method (developed by Dr. Alma Winward, USDA, Forest Service, Pacific Northwest Region [Winward 2000]) provides for beginning at a set point on the stream and pacing along the stream bank. As each plant community along the stream bank changes, a new community is described and mapped based on "steps" counted from the beginning. The plant community terminology was developed by Mr. Potter during his tenure as Province Ecologist, USDA, Forest Service, Pacific Southwest Region, Sequoia, Sierra and Stanislaus National Forests. References for his work are found in Appendix F, Potter 2005.

Mr. Potter also conducted a "Woody Species Riparian Survey" for a set distance along Marco Stream and Polo Stream (see Plant Habitat Map, Marco Spring and Stream Site, and Plant Habitat Map, Polo Spring and Stream Site found in Map Pouch A and Map Pouch B respectively). The Woody Species Regeneration Survey was also developed by Dr. Alma Winward (Winward 2000). This survey technique is designed as Baseline Information for a monitoring survey of the Marco and Polo streams after the pipeline system is in-place and is diverting water. A complete report of the Baseline Survey for Monitoring Plant Habitat Changes is found in Appendix E.

Sugar Pine Spring Water Pipeline
Table 1: Survey dates, Personnel, Hours and Survey Description

Date	Personnel performing survey & hours spent	Description of survey work
May 25, 2005	Michael W. Skenfield, Biological and Wetland Consultant, with Field Assistant Beatrice Hollars (Skenfield & Hollars) 4 hours expended	Met with area botanist Margaret Willits (Mi Wok/Summit Ranger Districts, Stanislaus National Forest) to discuss Sensitive Plant List to be used as an objective for the plant survey. Ms. Willits stated that mosses, liverworts and lichens must be included along with vascular plants.

Sugar Pine Spring Water Pipeline Table 1: Survey dates, Personnel, Hours and Survey Description		
Date	**Personnel performing survey & hours spent**	**Description of survey work**
May 25, 26; June 29, 30, 2005	Skenfield and Hollars 48 man-hours expended	Conducted complete floristic survey using 100% observation of historic (abandoned) railroad grade beginning at point where pipeline route to Marco Spring leaves RR grade, continuing in a southerly direction, then westerly to end of Study Area at Cottonwood Creek. The initial two miles of RR grade are untraveled and partially grown-over. The succeeding 3 miles to Cottonwood Creek are along the sides of existing earth-surface roads. All vascular plants were identified. Bryophytes were collected and sent to Bryophyte Specialist David Toren (Toren 2005, 2008).
December 5, 07	Skenfield and Hollars	Initial Wetland Delineation and mapping of spring/ stream area of Marco and Polo basins.
May 22, 2008	Skenfield and Hollars; Donald Potter (Plant Ecologist); Harold Basey (Amphibian Biologist - 5/10/08) 36 man hours for plants	Skenfield and Hollars ran "Greenline Survey" (Winward 2000) along entire length of Polo Stream and set wetland sample plots. Also identified plants in four quadrat sample areas. Potter ran Greenline on Marco Stream and identified grass, sedge, rush. A total of 36 man-hours were provided for plant surveys. Harold Basey provided one day (8 hours) surveying for amphibians along Marco and Polo streams.
August 6, 2008	Skenfield, Hollars and Potter 24 man-hours expended	Skenfield and Hollars conducted wetland delineation sample plots along Marco and Polo streams. Potter conducted "Reproduction Survey (Winward 2000) of riparian trees/shrubs along Marco and Polo streams. Both sampling methods were accompanied by searching for sensitive plant species. Moss, liverwort and lichen were collected. Wildlife were observed and sightings recorded.

Biologist/Botanist Skenfield compared Table 3.6a **Invasive Non-native Plant Species (noxious weeds) by Sierra Nevada National Forests** from the Sierra Nevada Plan Amendment, FEIS Volume 2, Chap. 3, Part 3.6(held at SNF Supervisor's Office) with species inventoried on the Pipeline Project.

Wetland Sample Plots were established along Polo Stream and Marco Stream.

DATA SUMMARY

Two types of data were collected on the pipeline project: (1) approximately 5.5 miles of pipeline route were surveyed for sensitive plants and wildlife with the objective of assessing possible impacts from pipeline construction; (2) approximately 2,000 lineal feet of stream channel-and-bank for Marco and Polo springs/streams were intensively inventoried as baseline data for monitoring surveys. No direct impacts are

planned for the streams; however, the subsurface diversion of a portion of the ground water could reduce flows from each spring which, in turn, provide irrigation to the riparian communities along the streams.

The pipeline route is a linear survey area 20 ft. wide and 5.5 miles long. The objectives of the pipeline survey were to determine whether or not rare plants were present and to determine what sensitive wildlife species could be affected. Plants encountered during the floristic survey along the pipeline are found on the Plant Inventory as those Dicots and Monocots without a wetland indicator code of FAC, FACW or OBL (see Appendix B-1). Sensitive (Rare) plant species which have habitat present along the pipeline are found on Table 2.

Wildlife observed (or signs observed which give proof of presence) are found in Appendix B-2. Additional wildlife species are included with the table to give examples of what species are expected to be present in the habitats provided. Sensitive species which have habitat present are discussed on Table 3. Biologist Tom Beck determined that the California spotted owl has two territories through which the pipeline would pass (see Appendix A, Biological Resources Map, and Appendix C - Tom Beck Report). Each territory (Protected Activity Center) is shown where it passes through the pipeline route (RR Grade 56+00 to 88+00, and 113+00 to 159+00, and finally 230+00 to end).

Skenfield observed that large old-growth oak along the RR Grade between 0+00 and 88+00 (see Biological Resources Map, Appendix A) have cavities that are likely habitat for bats as well as squirrels and a variety of songbirds. Sensitive species (the objective of the survey) which could utilize the large trees are the western red bat (*Lasiurus blossevillii*) and the pallid bat (*Antrozous pallidus*). Other sensitive bat species present are known to forage (at night) over the habitats of the pipeline route (see Table 3).

The riparian and wetland plant life was inventoried along Marco and Polo streams by Skenfield and Plant Ecologist Potter using the Greenline Method (see Appendix E). Amphibian animals were searched for by Wildlife Biologist Basey along both Marco and Polo streams (see Appendix D).

Wetland Sample Plots for the Marco and Polo stream basins were established by Skenfield and Hollars (see Appendix E, Wetland Sample Plot Method).

RESULTS

The following section will summarize the results of the survey along the pipeline route from the Marco well collar downslope from the Polo well collar downslope to the abandoned railroad grade (described as Marco 0+00 to Marco 12+00 at railroad grade) then from the Polo well collar downslope to the railroad grade (Polo 0+00 to Polo 17+00 at railroad grade). The survey begins along the RR grade at Marco 12+00 and continues southward to Polo 17+00. The survey continues along a grade which has been cleared of ties with a bulldozer. Since the grading, shrubs of the Montane Chaparral Habitat (Mayer 1988) and seedlings, saplings and groundcover of the Sierran Mixed Conifer Habitat (Mayer 1988) have reclaimed the cut-and-fill banks of the grade. Dominant plants along the grade (in this section) are greenleaf manzanita (*Arctostaphylos patula*), saplings of California black oak (*Quercus kelloggii*), whitethorn (*Ceanothus cordulatus*), deerbrush (*Ceanothus integerrimus*) and bearclover (*Chamaebatia foliolosa*). Grasses such as ripgut brome (*Bromus diandrus*), dogtail (*Cynosurus echinatus*) and blue wildrye (*Elymus glaucus*) make up ground-cover of openings not vegetated in bearclover. Wildflowers are scattered along the grade where they find a niche - such as mountain violet (*Viola purpurea*), false solomon's seal (*Smilacina racemosa*), Sierra monkeyflower (*Mimulus leptaleus*) and meadow rue (*Thalictrum fendleri*).

From RR Grade 0+00 to RR Grade 235+00, the roadbed is traveled and compacted by vehicles. The road

width which is planned for impact by the pipeline ditch construction is already disturbed by vehicular use. In an effort to determine whether or not sensitive plants could occur along the road edge and road banks, botanists Skenfield and Hollars drove slowly along the road and identified plants. There was no special geologic or soils habitat such as volcanic slopes, serpentine soil, mesic sites in this length of the pipeline route. Where there were rock outcroppings, the botanists stopped and searched intensively. Plants found are listed in the Plant Inventory (Appendix B-1) as those Dicots/Monocots without a wetland indicator code (those plants with a wetland code are found in the Marco and Polo stream basins).

A mesic habitat (seepage from a spring) was found to intersect the road between RR Grade 235+00 and RR Grade 237+00, a distance of approximately 100 feet. This area was inventoried for rare plants although the project applicant proposes to avoid it either by (1) drilling beneath the seepage area, or (2) moving pipeline route above.

Each of the streams crossed by the RR Grade/Road are crossed by an old existing fill and culvert. These streams are noted on the Biological Resources Map (Appendix A) as RR Grade 17+00, 50+00, 77+00, 98+00, 113+00, 142+00 (not noted) and 200+00.

One stream (unnamed but assigned the name "Burney Creek" by the Applicant) is noted on the Map at 950 ft. downslope form the Polo POD. This is an Intermittent Stream (Cowardin 1979) with a watershed of less than ½ mile. The stream width is two feet at the pipe-crossing location. No effort is made to conduct a specific delineation since the project proposes to drill-and-sleeve beneath the stream.

The proposed pipeline from Marco POD to the RR Grade (1,200 ft.) is designed along a moderately-steep slope. Timber harvest has occurred in the past, leaving a relatively young stand which has filled in beneath with Montane Chaparral and Sierra Mixed Conifer reproduction. Because of the dense shrub-and-young-growth tree cover, the herbaceous ground cover of grasses and wildflowers is restricted to a few scattered openings. Most often the openings are dominated by bearclover (*Chamaebatia foliolosa*).

At Marco 8+00 there is a large geologic formation of rock rubble. Soil has developed only in pockets. Shrub species such as bitter cherry (*Prunus emarginata*), mountain whitethorn (*Ceanothus cordulatus*) and greenleaf manzanita (*Arctostaphylos patula*) dominate the rock area.

The proposed pipeline for Polo 0+00 to Polo 17+00 begins on a skid trail and continues downslope through a cut-over stand then crosses under Burney Creek. From the creek crossing downslope the route passes through an Open Sierra Mixed Conifer stand with an open understory.

The groundcover is primarily a thick layer of leaf litter with scattered plants including trail plant (*Adenocaulon bicolor*), hounds tongue (*Cynoglossum grande*), mountain jewel flower (*Streptanthus tortuosus*), common chickweed (*Stellaria media*), bleeding heart (*Dicentra formosa*), bedstraw (*Gallium sp*) and mountain violet (*Viola purpurea*).

Shrubs such as snowberry (*Symphoricarpos albus*), currant (*Ribes cereum*) and gooseberry (*Ribes roezlii*) are also present (see Appendix B-1 for Inventory on pipeline route).

Table 2, Table 2A and Table 3 follow this section. **Table 2** provides results of the field surveys for plant habitat presence/absence. **Table 2A** provides plant elevation range and blooming period along with an indication of dates on which surveys were conducted. **Table 3** provides results of field surveys for the presence/absence of habitat for sensitive animal species.

(There will be a continuation of the RESULTS section of this report following these tables – see page 27).

SUGAR PINE SPRING WATER PIPELINE **TABLE 2**

SPECIAL-STATUS BRYOPHYTES, LICHENS AND HERBACEOUS VASCULAR PLANTS WITH POSSIBLE HABITAT ON THE PROJECT SITE

The following species were taken from the Rare Plant List for the Stanislaus National Forest, the California Natural Diversity Data Base (CNDDB 2010) and California Native Plant Society On-line Rare Plant Inventory (CNPS 2010) for Hull Creek 7.5' Quadrangle and the adjacent quadrangles, as within the **elevation range** of the project. (4500 ft to 5200 ft - 1372m to 1585m). Those species within the elevation range of the project site are marked as HABITAT PRESENT. Those species outside the elevation range of the project area are marked as HABITAT ABSENT.

The species with HABITAT ABSENT were eliminated from further search. Those species with habitat present were searched for in spring using the California Department of Fish and Game/California Native Plant Society Guidelines (CDFG 2000) for a complete floristic survey. Checklist and flora used for reference during floristic surveys are described under Appendix F as: Abrams 1940; Hickman 1993; Kartesz 1994; Munz & Keck 1968; and Toren 2008.

SPECIES NAME	STATUS CNPS/State/Fed/ Forest Service	HABITAT	HABITAT IN STUDY AREA (PRESENT OR ABSENT)
Allium tribracteatum Three-bracted onion (CNDDB Search Report)	1B/-/- Forest Service Sensitive	Chprl, LCFrs. Volcanic Slopes and ridges. Elevation: 1100m - 2750m Blooms: Apr - Aug	ABSENT No volcanic slopes and ridges on project area.
Allium yosemitense Yosemite onion	1B/CR/- Forest Service Sensitive	Chprl, CmWld, LCRrs. Rocky metamorphic or granitic. Elevation: 535m - 2200m Blooms: Apr - Jul	PRESENT This species was searched for on rocky habitat; none found.
Balsamorhiza macrolepis var. macrolepis Big-scale balsamroot BAMA	1B/-/- Forest Service Sensitive	CmWld, VFGrs / sometimes serpentinite. Elevation: 90m - 1400m Blooms: Mar - Jun	PRESENT This species was searched for in spring. No serpentinite present.

SPECIES NAME	STATUS CNPS/State/Fed/ Forest Service	HABITAT	HABITAT IN STUDY AREA (PRESENT OR ABSENT)
Bolandra californica Sierra bolandra	4/ – / –	LCFrs, UCFrs, Mesic, rocky soil. Elevation: 975-2450 Blooms: Jun - Jul	PRESENT Mesic areas of springs and streams as water seeps through rocky soil were searched. The species was not found.
Botrychium ascendens Upswept moonwort	2/-/- Forest Service Sensitive	LCFrs; Mesic; Associated with open streamside zones in sunny locations.. Elevation: 1500m - 1830m Blooms: Jul - Aug	PRESENT Limited to open sunny locations upper end of Marco Stream and along Polo Stream. Searched - none found.
Botrychium crenulatum Scalloped moonwort	2/-/- Forest Service Sensitive	LCFrs, Mshsw, bogs, fens. Freshwater. Elevation: 1500m - 3280m Blooms: Jun - Jul	PRESENT Along Marco Stream at upper end. Polo Stream at streamside meadow, and meadow at lower end. None found.
Botrychium minganense Mingan moonwort	2/-/- Forest Service Sensitive	LCFrs. Mesic. Open streamside zones. Elevation: 1500m - 1830m Blooms: Jul - Aug	PRESENT Limited to unshaded areas along each stream Searched for and not found.
Botrychium montanum Western goblin	2/-/- Forest Service Sensitive	LCFrs. Shady coniferous forests, Mesic. Elevation: 1500m - 1830m Blooms: Jul - Aug	PRESENT Shady portions of both streams searched - none found.
Calochortus clavatus var. avius Pleasant Valley mariposa lily	1B/-/- Forest Service Sensitive	Open oak, pine forest, LCFrs, (Josephine Silt Loam, volcanic). Elevation: 305m - 1800m Blooms: May - Jul	PRESENT Open upland slopes of Marco & Polo Stream banks. None found.

SPECIES NAME	STATUS CNPS/State/Fed/ Forest Service	HABITAT	HABITAT IN STUDY AREA (PRESENT OR ABSENT)
Carex tompkinsii Tomkin's sedge	4/ SR / – Forest Service Watch List	Chprl, CmWld, LCFrs, UCFrs; Open Forest slopes Elevation 420-1830 m Boooms: May - Jul	PRESENT Expected habitat is along pipeline route from Marco and Polo springs down to RR grade. Searched for and not found.
Clarkia australis Smalls' southern clarkia (CNDDB Search Report)	1B/-/- Forest Service Sensitive	CmWld, LCFrs. Dry forest openings & rock outcroppings. Elevation: 800m - 2075m Blooms: May - Aug	PRESENT All Clarkia species checked. Only C. rhomboidea found.
Clarkia biloba ssp. australis Mariposa clarkia (CNDDB Search Report)	1B/-/- Forest Service Sensitive	Chprl, CmWld. Elevation: 300m - 945m Blooms: May - Jul	PRESENT No Clarkia biloba found; therefore no Clarkia biloba australis.
Cypripedium montanum Mountain lady slipper	4/-/- Forest Service Sensitive	CmWld, LCFrs Shaded forest or woodland. Elevation: 185m - 2225m Blooms: Mar - Aug	PRESENT Searched all shaded woodland and forest along pipeline route. No Cypripedium montanum found.
Didymodon norrisii Norris' beard-moss	2/ – / – Forest Service Sensitive	CmWld, LCFrs, intermittently mesic, on rock. Elevation: 600-1700 m Blooms: NA	PRESENT Mosses collected along each stream. All sent to David Toren for ID. None of the sensitive species were found along Marco & Polo Streams.

SPECIES NAME	STATUS CNPS/State/Fed/ Forest Service	HABITAT	HABITAT IN STUDY AREA (PRESENT OR ABSENT)
Drosera rotundifolia Round-leaved sundew	Considered too common Forest Service Watch List	Sphagnum bogs Elevation: 0-2000 m Blooms perennial	ABSENT No bogs along pipeline route. Searched for among mosses on Marco and Polo Stream. None found.
Eriophyllum congdonii Congdon's' woolly sunflower	1B/CR/- Forest Service Sensitive	Chprl, CmWld, LCFrs. Rocky (metamorphic) soil. Elevation: 800m - 1900m Blooms: May - Jun	PRESENT Specifically searched rock outcropping areas. No woolly sunflower found.
Eriophyllum nubiegenum Yosemite woolly sunflower	1B/-/- Forest Service Sensitive	Chprl, LCFrs. Gravelly soil. Elevation: 1525m - 2365m Blooms: May - Aug	PRESENT In Cottonwood Creek area. Searched for but not found.
Erythronium taylori Taylor's fawn lily	1B/-/- Forest Service Sensitive	LCFrs (metamorphic, rocky). Known only from Pilot Ridge. Elevation: 1340m - 1400m Blooms: Apr - May	ABSENT No metamorphic rock habitat.
Erythronium tuolumense Tuolumne fawn lily	1B/-/- Forest Service Sensitive	Chprl, LCFrs. Clay soils on cliffs near drainages. Under old growth manzanita. Elevation: 510m - 1460m Blooms: Mar - Jun	PRESENT Searched all shaded areas near drainages. The species was not found.
Hulsia brevifolia Short-leaved hulsia	1B/ – / – Forest Service Sensitive	LCFrs, UCFrs, Granitic or Volcanic, gravel-sand Elevation: 1500-3200 Blooms May - Aug	PRESENT Searched for along stream banks in granitic sand. Not found.

SPECIES NAME	STATUS CNPS/State/Fed/ Forest Service	HABITAT	HABITAT IN STUDY AREA (PRESENT OR ABSENT)
Hydrotheria venosa (Peltigera hydrotheria) Veiny aquatic lichen	– / – / – Forest Service Sensitive	Aquatic. Fully aquatic, foliose lichen found submerged on rocks (Hale 1969). Marco & Polo Streams are likely habitat (pers. comm. Margaret Willits, Forest Service Botanist, 1/9/08).	PRESENT Only aquatic habitat is along Marco & Polo streams and lateral seeps. Collected all thallus plants for ID. Not found.
Iris hartwegii ssp. columbiana Tuolumne iris	1B/-/- Forest Service Sensitive	CmWld, LCFrs. Under forest canopy. Elevation: 425m - 1400m Blooms: May - Jun	PRESENT No iris were found along the streambanks of Marco or Polo Str. The subspecies was not found along pipeline route.
Jensia yosemitana Yosemite tarplant (Madia in Jepson)	3/ – /– Forest Service Watch List	LCFrs, Medws & seeps. Grassy slopes. Elevation: 1200-2300 m Blooms: Apr - Jul	PRESENT Searched for on seep area on RR grade - not found. Searched for along Marco/Polo streams; not found.
Lewisia kelloggii ssp. kelloggii Kellogg's lewisia	3/-/- Forest Service Sensitive	UCFrs, Openings on slate substrate (Tibor 2001) Elevation: 1900 - 2900m Blooms: Jul - Aug	ABSENT No slate substrate.
Lomatium stebbinsii Stebbins' lomatium (CNDDB Search Report)	1B/-/- Forest Service Sensitive	Chprl, LCFrs. This gravelly volcanic clay, open Pp. forest. sparse veg. site. Elevation: 900m - 1750m Blooms: Mar - May	PRESENT No species of Lomatium found on pipeline route or in Marco and Polo study area.

SPECIES NAME	STATUS CNPS/State/Fed/ Forest Service	HABITAT	HABITAT IN STUDY AREA (PRESENT OR ABSENT)
Meesia triquetra Three-ranked hump-moss	2 /– /– Forest Service Sensitive	BqFns, Medws, Seeps Elevation: 1300m - 2500m Blooms: NA	PRESENT Mosses collected along each stream. All sent to David Toren for ID. None of the sensitive species were found along Marco & Polo Streams. or other locations on pipeline route.
Meesia uliginosa Broad-nerved hump-moss	2/-/- Forest Service Sensitive	Medws, and seeps Elevation: 1300m - 2500m Blooms: NA	PRESENT Mosses collected along each stream. All sent to David Toren for ID. None of the sensitive species were found along Marco & Polo Streams or other locations.
Mielichhoferia elongata Elongate copper-moss	2/-/- Forest Service Sensitive	CmWld, metamorphic rock usually vernally mesic. Elevation: 500m - 1300m Blooms: Perennial	ABSENT No metamorphic rock substrate.
Mimulus filicaulis Hetch hetchy monkeyflower	1B/-/SC Forest Service Sensitive	CmWld, LCFrs, UCFrs meadows, loamy, mesic. Elevation: 900m - 1750m Blooms: Apr - Aug	PRESENT All meadows searched. None found.
Mimulus gracilipes Slender-stalked monkeyflower	1B/-/- Forest Service Sensitive	CmWld, Chprl, LCFrs. Decomposed granite often in burned or disturbed places. Elevation: 500m - 1300m Blooms: Apr - Jun	PRESENT Only Mimulus leptaleus, Mimulus moschatus and Mimulus torreyi were found.

SPECIES NAME	STATUS CNPS/State/Fed/ Forest Service	HABITAT	HABITAT IN STUDY AREA (PRESENT OR ABSENT)
Mimulus grayi Gray's monkeyflower	4/ – / – F.S. Watch List	LCFrs, UCFrs, mesic sites. Near hillside streams & seeps in partial shade. Elevation: 500-2900 m Blooms: May - Jul	PRESENT Searched for on seepage area on RR grade - not found. Searched for along Marco/Polo streams - not found.
Mimulus inconspicuous Small-flowered monkeyflower (formerly M. grayi)	4/ – / – F. S. Sensitive	Chprl, CmWld, LCFrs, mesic sites Elevation: 160-2000 m Blooms: May - Jun	PRESENT Searched for on seepage area on RR grade and along pipeline route and Marco-Polo streams - not found. (not shown for Tuol. Co. in CNPS data)
Mimulus pulchellus Pansy monkeyflower	1B/-/- Forest Service Sensitive	LCFrs, Meadows and seeps. Sandy decomposed granite vernally wet areas upslope of Mimulus guttatus. Elevation: 600m - 2000m Blooms: May - Jul	PRESENT Habitat only on seeps along pipeline and on Marco/Polo Str. Only Mimulus Guttatus found in small populations.
Rhyncospora capitellata Beaked sedge	2/ – / – Forest Service Watch-List	LCFrs, Medws and Seeps. Marsh. Elevation: 455-2000m Blooms: Jul - Aug	PRESENT All Cyperaceae collected and keyed by Don Potter, Plan Ecologist. This species not found.
Silene invisa Short-petalled campion	CNPS Considers Too Common Forest Service Watch-List	LCFrs; open forest Elevation: 900-2800 m Blooms May - Jul	PRESENT Habitat only on upper banks in openings along Marco and Polo Streams. None found. Habitat along pipeline route – none found.

CNPS HABITAT CODES

(Tibor 2001)

AlpBR	=	Alpine boulder and rock field	LCFrs	=	Lower montane coniferous for.
AlpDS	=	Alpine dwarf scrub	MDScr	=	Mojavean desert scrub
BgFns	=	Bogs and fens	Medws	=	Meadows and seeps
BUFrs	=	Broadleafed upland forest	MshSw	=	Marshes and swamps
CBScr	=	Coastal bluff scrub	NCFrs	=	North Coast coniferous forest
CCFrs	=	Closed-cone coniferous forest	PbPln	=	Pebble (Pavement) plain
Chprl	=	Chaparral	PJWld	=	Pinyon and juniper woodland
ChScr	=	Chenopol scrub	PLyas	=	Playas
CmWld	=	Cismontane woodland	RpFrs	=	Riparian forest
CoDns	=	Coastal dunes	RpScr	=	Riparian scrub
CoPrr	=	Coastal prairie	RpWld	=	Riparian woodland
CoScr	=	Coastal scrub	SCFrs	=	Subalpine coniferous forest
DeDns	=	Desert dunes	SDScr	=	Sonoran desert scrub
GBGrs	=	Great Basin grassland	STWld	=	Sonoran thorn woodland
GBScr	=	Great Basin scrub	UCFrs	=	Upper montane coniferous forest
InDns	=	Inland dunes	VFGrs	=	Valley and foothill grassland
JTWld	=	Joshua tree "woodland"	VnPls	=	Vernal pools

* DEFINITIONS FOR STATUS CODES	
CNPS LIST: indicates species (plants only) that are listed by the California Native Plant Society (Tibor 2001):	**State and Federal (CDFG 2000a):**
CNPS 1A = List A: Plants Presumed Extinct in California	* SE = State-listed endangered
CNPS 1B = List 1B: Plants Rare, Threatened or Endangered in California & elsewhere	* ST = State-listed threatened
CNPS 2 = List 2: Plants Rare, Threatened or Endangered In California, but more common elsewhere	* SR = State-listed rare
CNPS 3 = List 3: Plants about which we need more information - a review list	SCE = State candidate for listing, endangered
CNPS 4 = List 4: Plants of Limited Distribution - A Watch List	SCT = State candidate for listing, threatened
	CSC = California Department of Fish and Game Species of Special Concern
	* FE = Federally listed endangered
Codes in the Status Column(s) are arranged as follows:	* FT = Federally listed threatened
PLANTS:	FPE = Federally proposed endangered
CNPS List#/State Code/Federal Code	FPT = Federally proposed threatened
	FC = Federal candidate to become proposed species
ANIMALS:	SC = USFWS "Species of Concern" (no longer monitored)
State Code/Federal Code	* = the only descriptions protected under Federal or State Endangered Species Act (FESA, CESA

RARE PLANT ELEVATION AND BLOOMING/FLOWERING INFORMATION

"X" shows that floristic surveys (CDFG 2000) occurred that month.

The following plant species have habitat present	Meters/ Elevation Range	FLOWERING PERIOD (shown by shaded areas)						
		March	April	May	June	July	Aug.	Sept.
Allium tribacteatum	1100 - 2750		X	X	X		X	
Allium yosemitense	535 - 2200		X	X	X		X	
Balsamorhiza macrolepis macrolepis	90 - 1400		X	X	X		X	
Bolandra californica	975-2450				X			
Botrychium ascendens	1500 - 1800						X	
Botrychium crenulatum	1500 - 2500			X	X		X	
Botrychium minganense	1500 - 1800	perennial			X		X	
Botrychium montanum	1500 - 1800	perennial			X		X	
Calochortus clavatus	300 - 1800			X	X			
Carex tomkinsii	420-1830			X	X			
Clarkia australis	800 - 2075			X	X		X	
Clarkia biloba australis	300-945			X	X			
Cypripedium montanum	185 - 2225		X	X	X		X	
Didymodon norrisii	600-1970	perennial						
Eriophyllum congdonii	800-1900			X	X			
Eriophyllum nubigenum	1525 - 2365			X	X		X	

The following plant species have habitat present	Meters/ Elevation Range	FLOWERING PERIOD (shown by shaded areas)						
		March	April	May	June	July	Aug.	Sept.
Erythronium tuolumense	510 - 1460		X	X	X			
Hulsia brevifolia	1500 - 3200			X	X		X	
Hydrotheria venosa	possible	Perennial						
Iris hartwegii columbiana	425 - 1400			X	X			
Jensia yosemitana	1200-2300		X	X	X			
Lewisia kelloggii	500 - 2800						X	
Lomatium stebbinsii	900 - 1750		X	X				
Meesia triquetra	1300 - 2500	Perennial						
Meesia uliginosa	1300 - 2500	Perennial						
Mimulus filicaulis	900 - 1750		X	X	X		X	
Mimulus gracilipes	900 - 1300		X	X	X			
Mimulus grayi	500-2900			X	X			
Mimulus inconspicuous	500-2900			X	X			
Mimulus pulchellus	600 - 2000			X	X			
Rhynchospora capitellata	455-2000						X	
Silene invisa	900-2800			X	X			

SPECIAL-STATUS ANIMALS WITH POSSIBLE HABITAT ON THE PROJECT SITE

The following species were taken from the two data base sources (CNDDB 2010 and USFWS 2010) as having habitat within the 7 ½' quadrangles for Hull Creek and Twain Harte, and in the **elevation and major habitat type** of the Study Area. The Stanislaus National Forest Sensitive Animals List was referred to by Biologist Tom Beck. During site visits the habitat requirements for each species were compared with habitat at the site, and a determination was made as to the presence or absence of habitat. Where habitat is present, a description is provided for expected use on the pipeline route. Definitions of habitat codes are found at the end of this table. The California red-legged frog was included due to conflicting elevation reports. The Yosemite toad was omitted since its lowest elevation range is 1,000 ft. above project elevation.

SPECIES NAME	STATUS State/Federal	HABITAT REQUIREMENTS	HABITAT STATUS ON SITE (PRESENT OR ABSENT)
Amphibians - Listed			
Rana aurora draytonii California red-legged frog	None/Threatened	**FEW, VRI. Pools and ponds, intermittent streams with permanent pools** (Jennings and Hayes 1994). Found 99% of the time in pools with depths .7m or greater. This frog's response behavior is to dive to deepest part of pool. Requires quiet pools of streams or ponds with dense overhanging vegetation. Needs emergent vegetation for egg masses and cover for tadpoles (Zeiner 1990b). Preferred habitat is deep-water pools (greater than 0.7 meters) with still or slow-moving water (Hayes & Jennings 1988). Adults estivate in small mammal burrows and moist leaf litter (Jennings & Hayes 1994). Most literature shows elevation range **below 5,000 ft.**	ABSENT No habitat on impacted pipeline and no habitat in Marco/Polo Streams (see Appendix D).
Birds Listed			
Strix nebulosa Great gray owl (Survey and evaluation by Thomas W. Beck, Wildlife Biologist)	Endangered / none FS Sensitive Species	**WTM, SMC, PPN, RFR with large conifer or hardwood snag or broken top for nesting and large meadows for foraging** (Winter 1986). Ponderosa pine and oak woodlands surrounding or near montane meadows. Nesting in broken conifer or black oak cavity or abandoned stick nests (Beck and Winter 2000; Winter & Beck 2002). Resident of mixed conifer or red fir forest within 200 yards of a meadow. Meadow habitat must support montane voles and/or gophers. Meadow must be at least 15 acres in size or several smaller meadows within one-mile radius totaling at least 30 acres in order to support a nesting pair on a regular basis (Beck and Winter 2000; Winter & Beck 2002).	ABSENT There is no foraging habitat for great gray owl in the project area and no records of nesting in this part of the Mi-wok Ranger District (USDA 2006). The nearest known GGO nesting is 5 miles west of the project. Thompson Meadow just south of the project has potential nesting habitat, and a nest there could have a territory range that includes the pipeline route. It was surveyed in 1991 and in subsequent years with no detections. See Appendix C.

SPECIES NAME	STATUS State/Federal	HABITAT REQUIREMENTS	HABITAT STATUS ON SITE (PRESENT OR ABSENT)
Haliaeetus leucocephalus Bald eagle (Thos. Beck rpt.)	CA Endangered Species FS Sensitive Species	**SMC, PPN, RIV, LAC** This species requires large tree stands of conifers usually within one mile of a major water body for nesting and major water bodies that support large populations of fish (Zeiner et al. 1990). It generally nests within one mile of large bodies of water on trees that dominate the surrounding stands and often that provide a view of the nearest large reservoir, lake or stream. Over the past 20 years it has become re-established in the Central Sierra Nevada (USDA 2010)	ABSENT This species is now a permanent resident with nesting at several locations since the 1990's. It is routinely seen at Cherry Lake, Beardsley Reservoir, along the Middle Fork and South Fork of the Stanislaus River, and NF Turolune River. It has not been seen near the proposed project where suitable habitat is lacking.
Mammals Listed			
Martes pennanti (pacifica) Pacific fisher	None /Candidate Species Forest Service Sensitive Species	**PPN, MHC, LPN, WFR, SMC, LPN, RFR** The fisher finds habitat in large areas of mature, dense forest stands with snags and greater than 50% canopy closure and their diet includes small mammals and forest truffles(Zeiner et al 1990a). Tree cavities or rock talus are used for nesting. The fisher avoids crossing large openings and keeps close to forest stands (Buck 1983).	ABSENT Most of the population in the Sierra extends south from Yosemite NP and they are extremely rare north of this area. Protocol surveys were conducted throughout the Stanislaus NF in 1994, with 3 of the sample stations within 4 miles of the project site, but no detections were made (Zielinski et al 1995).
Vulpes vulpes necator Sierra Nevada red fox	Threatened/ none FS Sensitive Species	**RFR, LPN, SCN, WTM** This species utilizes open forest, meadows and riparian areas in close proximity to conifer forest. It inhabits mixed conifer and true fir forests as well as lodgepole and Jeffrey pine dominated stands. Forested areas interspersed with meadows and brush fields are preferred. Open area and meadows are used for hunting and forested habitats for cover and reproduction (Zeiner et al. 1990). Its diet consists of primarily of small and medium sized mammals, but it will also eat insects, carrion and berries (ibid). Unlike martens, red fox are believed to be sensitive to human presence and disturbance (Grinnell et al. 1937).	ABSENT Recent sightings of this species are very rare (USDA 2006). Historic sightings include Thompson Meadow, one mile south of the project area in 1982, and in 1994 a sighting near Confidence, about 6 miles west of the project area (ibid.). Most experts feel it occurs mainly above 7,000 feet (USDA 2001; Jurek 1992).
Gulo gulo Wolverine	Threatened/ none FS Sensitive Species	**SMC, RFR, LP, SCN** This species prefers remote forested and alpine areas. It is apparently adversely affected by increasing human use in its habitats. Wolverines were never abundant but credible sightings are now very rare. The persistence of the species in the central Sierra is questionable as there has been no well-documented data on its status in recent decades.	ABSENT There are no records of this species near the project area in recent decades. One historic sighting was at Bourland Meadow in the 1930's, 8 miles to the NE, and one sighting 6 miles to the west along Highway 108 in 1993. Surveys conducted in 1990 to 1992 in high elevation prime habitat on the Stanislaus NF resulted in no detections.

SPECIES NAME	STATUS State/Federal	HABITAT REQUIREMENTS	HABITAT STATUS ON SITE (PRESENT OR ABSENT)
Amphibians - Species of Concern			
Rana muscosa (or Rana sierrae) Mountainl yellow-legged frog	Species of Special Concern / Candidate species FS Sensitive Species	**RIV, FEW, deep pools that don't freeze.** Found year-around in streams, rivers, ponds and lakes (5,000 - 13, 000 ft.). Prefers mountain meadows, riparian, deciduous and alpine meadow habitats (Verner et al 1980). Habitat must have sufficient depth for over-wintering under ice (Jennings & Hayes 1994). Relatively- warm streams and ponds required during breeding and larva development.	ABSENT No suitable habitat. Streams very cold and pond freezes. See Appendix D for Basey Report
Reptiles - Species of Concern			
Clemmys marmorata Western pond turtle	Species of Special Concern / Species of Concern	**LAC, RIV, FEW, nesting in wide variety of habitats.** Elevation range sea level to 6,000 ft. (Zeiner 1990b). A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches that have a muddy or rocky bottom (Stebbins 1985). Aquatic animal which may leave water to estivate. Females leave aquatic site to make nests in terrestrial areas up to 325 ft. (most common in the literature; Nussbaum et al 1983) from water. Associated with permanent or nearly-permanent water in a wide variety of habitats. The turtle requires basking sites, submerged logs, rocks, mats of floating vegetation or open mud banks (Zeiner 1990)b. Uses permanent ponds, lakes, stream irrigation ditches or permanent pools along intermittent streams. (Holland 1991; Jennings and Hayes 1994). Uncommon in high gradient streams (Holland 1991). Nest found in clover field 100 m. from water (Nussbaum 1983).	ABSENT Only pooled site is on Polo Creek and no turtles were observed. Site is too shaded with no basking sites.
Birds - Species of Concern			
Accipiter gentiles Northern goshawk (Evaluation by Tom Beck)	Species of Special Concern/ – FS Sensitive Species	**SMC, LPN, RFR, MCH, MRI, PPN, ASP** Goshawks generally breed in coniferous and deciduous (aspen, cottonwood) forest habitats that are older-aged. Forests with intermediate canopy cover are considered most suitable for foraging (Zeiner et al 1990a). Nest stands are characterized by high canopy cover and are generally located on gentle to moderate slopes with north or northeast aspects (Fowler 1988). According to Keane (1999), goshawks on the Lake Tahoe region had nest sites with greater than average large trees and greater than 70% canopy cover. Similar findings were reported in Yosemite National Park (USDA 2001).	PRESENT There are no goshawk nesting sites in the vicinity of the railroad grade pipeline project area but goshawks occur in the general region (USDA 2006). A goshawk PAC is located about one mile to the east of the pipeline route on the east side of the Clavey River. The stands of trees located in some of the drainages along the pipeline route would be suitable for foraging by goshawk. No LOPs are required for this project for goshawk protection. See Appendix C.

SPECIES NAME	STATUS State/Federal	HABITAT REQUIREMENTS	HABITAT STATUS ON SITE (PRESENT OR ABSENT)
Strix occidentalis occidentalis California spotted owl (Evaluation by Tom Beck).	Species of Special Concern / Species of Concern FS Sensitive Species	**MHC, PPN, MRI, SMC** Spotted owls require large acreages of conifer or conifer/oak woodland and prefer forests with large, old trees and medium to dense canopy closure (Verner et al 1992). They need protection from other raptors (great horned owl, barred owl and northern goshawk) by having a habitat of dense secondary canopy within which to hide (ibid).	PRESENT There are two spotted owl territories in the vicinity of the railroad grade pipeline project. The potential disturbance to nesting is mitigated by a limited operating season during the nesting season on 2.1 miles of the pipeline route.
Mammals - Species of Concern			
Lepus americanus Snowshoe hare	Species of Special Concern / none (FS none)	**SMC, RFR, LPN, SCN, JPN, ASP, MRI, WTM** This species is an uncommon but stable resident primarily found in montane riparian habitats with thickets of alders and willows, and in stands of young conifers interspersed with chaparral. At higher elevations the species is also associated with aspen and wet meadow sites (Zeiner et al. 1990) (USDA 2004). Specifically, the early stages of conifer stands and aspen are likely habitat, primarily along edges of stands and near meadows and riparian zones (Zeiner 1990).	PRESENT Forest Service records show an historic sighting in Section 11, T2N, R.17E, on forest road 3N86. This is about 1.5 to 2 miles north of the pipeline location at an elevation of 5,320 ft., comparable to the project. Almost all other sightings on the Forest are above 7,000 feet elevation. Riparian habitat on the small streams below both Marco and Polo springs provide suitable habitat.
Plecotus townsendii Townsend's big-eared bat	Species of Special Concern/ none FS Sensitive Species	**SMC, PPN, MHC, MRI, VRI** Suitable habitats include coniferous forest, mixed conifer forest, mixed conifer-hardwood forest and riparian zones. These bats require caves, mines, tunnels, buildings, or other man-made structures for roosting and reproductive sites (Zeiner et al 1990). Townsend's big-eared bats are less likely to use trees and snags for roosting habitat than are pallid bats. They feed on insects associated with meadows and riparian zones within forest habitats (Pierson 1994). In forests, this bat concentrates activity along edges with openings and feeds primarily on moths (USDA 2001). Maternity colonies found May-August (Zeiner 1990).	PRESENT This bat was identified at Eagle Creek Pond and Busse Ranch Spring in 1994 by a FS bat survey crew (Gellman 1994). These sites are about 10 miles SW of the Railroad Grade pipeline area and at comparable elevations and habitat.

SPECIES NAME	STATUS State/Federal	HABITAT REQUIREMENTS	HABITAT STATUS ON SITE (PRESENT OR ABSENT)
Antrozous pallidus Pallid bat	Species of Special Concern/ none FS Sensitive Species	**BOW, BOP, MCH, MCP, PPN, SMC** Pallid bats are associated with grasslands, shrublands, oak woodlands, and forests up to about the elevation of mixed conifer forests and are most common in open, dry habitats with adequate roost sites (Zeiner et al. 1990). Roosts consist of caves, crevices, mines and occasionally hollow trees, snags and buildings, but they prefer rocky outcrops, cliffs and crevices with access to open habitats for foraging (USDA-FS 2001). It forages up to 8 feet over open ground and conditions of dense understory or brush within forest habitats are unsuitable for foraging (ibid.). Suitable habitat for foraging might be provided in old timber harvest units or burns where the brush has not closed in and there is a strong appearance of grass and forb dominated ground and the area is at lower elevation not greatly isolated within a forest landscape.. Maternity colonies found April-August (Zeiner 1990).	PRESENT This species was identified at Thompson Meadow about one mile south of the project area in 1994 by a FS bat survey crew (Gellman 1994).
Lasiurus blossevillii Western red bat	Species of Special Concern/ none FS Sensitive Species	**MRI, VRI, PPN, SMC, BOW, BOP.** This species is found primarily in riparian and wooded habitats, especially willows, cottonwoods, and sycamores at lower elevations, most commonly below 3,000 feet (Bolster 1998) but will migrate up to mixed conifer forest (Zeiner et al. 1990). It forages on flying insects over shrubs, open trees and forests. It roosts primarily in trees, usually in edge habitats adjacent to streams, fields or urban areas, and at heights of 2-40 feet above ground (ibid). This bat generally roosts within tree foliage or shrubs, and often along edge habitat. Maternity colony activity = May-mid-August (Zeiner 1990).	PRESENT This species is not documented in the project area vicinity but it could be present and could forage along portions of the railroad grade.

Explanation for Habitat Abbreviations for Wildlife

Habitat descriptions are based on the Wildlife Habitat Relationships (WHR) System. Habitats and their abbreviations are from Mayer and Laudenslayer, 1988.

Abbreviation	Habitat Name	Abbreviation	Habitat Name
AGS	Annual Grassland (non-native	PAS	Pasture (irrigated pasture)
ASP	Aspen	PPN	Ponderosa Pine
BOP	Blue Oak Pine Woodland	RFR	Fed Fir
BOW	Blue Oak Woodland	RIV	Riverine (streams, rivers)
CRP	Cropland (irrigated crops)	SCN	Subalpine Conifer
FEW	Fresh Emergent Wetland	SMC	Sierra Mixed Conifer
LAC	Lacustrine (ponds, lakes)	VOW	Valley Oak Woodland
LPN	Lodgepole Pine	VRI	Valley Foothill Riparian Woodland
MCH	Mixed Chaparral Association	WFR	White Fir
MHC	Montane Hardwood Conifer	WTM	Wet Meadow
MRI	Montane Riparian		

(RESULTS Continued)

No special-status (sensitive) **plants were found**. The direct-effect area of the pipeline route passed primarily over existing roads. Only 25% of the pipeline distance lay in a native habitat. Within that native habitat a section of pipeline lay along a skid trail excavated to subsoil. Most of the remaining pipeline route from Marco Spring or from Polo Spring to the RR Grade lay along brush-covered or forested, dry slopes.

Most of the special-status species with habitat "present" had habitat in the **Riparian Community Monitoring Area.** Intensive survey and collections were made along each of the two streams. Botanists Potter, Skenfield, Hollars and Basey (see Qualifications section) searched the stream zones. Bryophyte collections were sent to specialist David Toren. No sensitive species were identified.

Six species of sensitive animals were found to have habitat along the pipeline route. The following are discussed on Table 3:

The **northern goshawk** could forage along the pipeline route. No LOP is required for the goshawk since there are no nesting sites nearby. Since only short segments of the pipeline are under construction at any one time, goshawk foraging can continue.

The **California spotted owl** has two territories that include the pipeline route. These nest territories are shown on the Biological Resources Map. Limited Operating Periods (LOP) have been established that allow the project pipeline to be constructed without affecting owl nesting activities.

The **snowshoe hare** is an uncommon inhabitant of riparian habitats such as the streams below Marco and Polo Springs. The hare could forage in the meadow around Marco Spring and in the meadow along the Polo Spring. If the two springs were to be dried up by the pipeline diversion, a small foraging habitat for the hare could be eliminated. The project plan and the expected permit requirements are to maintain a measurable flow (at least 5 g.p.m.). It is expected that there will be no change to the foraging habitat for this hare.

The **Townsend's big-eared bat** and the **pallid bat** could have foraging habitat along the RR Grade pipeline route. Construction would occur during the day and foraging by the bats at night. Conflicts with nighttime foraging activities are not expected to occur.

The **western red bat** could have foraging and roosting sites in crevices and cavities of old trees. No old trees with cavities are planned for removal. Old trees along pipeline route are found only along the RR Grade between Sta. 0+00 and 88+00. Conflicts could occur between equipment noise and day-roosting activities. Maternity colonies are not expected at this elevation.

The **Riparian Community Monitoring Area** includes Marco Spring-and-Stream to the RR Grade and Polo Spring-and-Stream to the RR Grade. The habitats of the Monitoring Area are described by Plant Ecologist Potter as the forested riparian communities of *Abies concolor - Calocedrus decurrens / Senecio triangularis* (ABCO - CADE 27/SETR) and *Calocedrus decurrens - Alnus rhombifolia* (CADE 27/ALRH). These are the overstory communities that provide cover for the herbaceous communities along the stream channel.

There are two drainage areas included in the RCMA. (See Habitat Maps in Pouch A & B). Each originates in a basin which covers less than 100 acres. Both streams are first order, spring fed streams with a perennial flow of water that fluctuates little in volume during most years. Bank-full-widths are generally less than 7 feet, and summer flows are generally less than a foot wide. Depths are less than 6 inches in most instances. Stream beds are composed of boulders and cobbles in sections with steeper gradients and gravels and sands

in sections with lower gradients.

The greenline survey for the Marco Stream is found in Appendix E and shown on the Habitat Map. From the general Spring location downstream 38 ft. is the Carex jonsii habitat of a delicate meadow (Photo 9). The Marco stream averages 1.5 ft wide as it leaves the CAJO habitat (Photo 10).

From 38 ft. downstream of the Spring to 320 ft. downstream the habitat is *Calocedrus decurrens - Alnus rhombifolia* (CADE 27-ALRH). The stream widens to two feet. The plant cover is sparse and the understory open.

From 320 ft. downstream to the end of the Study Area (the cascading "falls" area) the habitat is dominated by *Alnus rhombifolia* over *Rhododendron occidentalis* (ALRH/RHOC). The stream has widened to 3 ft. in width and at a point 450 ft. downstream from the Spring a lateral spring feeds in and joins the main stream. At this point there is a minor habitat area of *Rhododendron occidentalis / Athyrium filix-feminia* (RHOC/ATFI).

The greenline survey for the Polo stream is also found in Appendix E and shown on Habitat Map - Polo Stream. From the spring location downstream 515 ft., *Abies concolor - Calocedrus decurrens* (overstory) with a dominant groundcover of *Senecio triangularis* (ABCO-CADE 27/SETR) is the community. The stream averages 2-3 ft. width and is primarily a sand/silt bottom.

For the next 54 ft. (515-569 ft.) the stream channel is dominated by a *Senecio triangularis* and *Athyrium filix-feminia* (lady fern) cover where a large seep feeds in from the south.

From 570 ft. downstream to 739 ft. the *Calocedrus decurrens* and *Abies concolor* overstory dominates.

At 739 ft. the overstory opens up and a sunlight-bathed wet meadow (Mid-elevation miscellaneous riparian gramineous vegetation) commands the stream basin to a point 1,126 ft. downstream of the spring. (Photo 11). This is also a point where the overstory of *Abies concolor* and *Calocedrus decurrens* takes over then opens again for a small pond (Photo 12). The pond is the result of a logging operation in the past creating a hole and dam alongside the stream channel.

Below the pond the stream habitats are noted by survey station. At Station 187 the overstory habitat is *Calocedrus decurrens* with scattered groups of *Alnus rhombifolia* along the stream channel. The stream at this point averages 2-3' wide and exhibits a muck bottom.

At Station 189 the overstory habitat changes to *Abies concolor - Calocedrus decurrens* and a spring seeps in from the south. At Station 190 the "Burney Creek" drainage joins Polo Stream. The stream is 3 ft. wide with a wetland fringe 6 ft. wide on each side. At 190+50 the flat stream widens out into a wet meadow (Photo 13).

DISCUSSION

Direct impacts (effects) of the pipeline installation have been minimized by the project design. The pipe route has been laid out by the project designer so as to utilize routes which have been previously disturbed. No mature trees are planned for removal. Logged-over areas, skid trails and the abandoned railroad grade are the primary route.

For most of the pipeline route the temporary impacts from tractor work on the pipe ditch will remain within a ten-foot wide strip (tractor-tread footprint plus berm of ditch spoils). For 1,200 feet of pipeline from Marco

Spring to the RR Grade and for 1,700 feet of pipeline from below Burney Creek to the RR Grade, the pipeline route will be traversing a slope. A small cut-and-fill roadway which may expand impacts to 20 ft. of width may be necessary.

Once the pipeline is in place and the ditch covered over, the only **possible impacts may be soil erosion**.

No rare (sensitive) plants were found on the pipeline route. There will be **no impacts to rare plants** or to **mature trees** along the route.

Six sensitive animal species could be impacted by the project. It was determined that the **goshawk** could continue foraging the area with **no impact (effect)**.

The **spotted owl** shares portions of the pipeline route on the RR Grade. Construction work is scheduled so as to avoid the nesting period. Possible impacts are less-than-significant with mitigation.

It is expected that each of the bat species (Townsend's big eared, pallid and red) would have maternity colonies outside the project...(Townsend's in caves, pallid and red at lower elevations out of the area). Impacts to maternity colonies would be **less-than-significant.**

Day-roosting in large trees or in tree cavities by the pallid and red bats could be impacted by the noise of pipeline construction. The recommended 100 ft. set back from large trees along the pipeline route should protect roosting bats from disturbance. The impacts to foraging activities due to day-roost disturbances of the bats is considered **less-than-significant with mitigation**.

The Riparian Community Monitoring Area is a form of mitigation for the possible reduction in water flow at the Spring. If it can show that subsurface water at each spring site can be diverted while still maintaining riparian plants (trees, shrubs, herbaceous vegetation, bryophytes and the like), then the diversion should be considered to have **no impact** (no effect) **on the riparian habitat** of Marco and Polo Springs.

Once the pipeline is covered over and the healed-over surface has become stabilized, it is expected that there will be no further impacts related to the pipeline construction. To ensure that the covered pipeline becomes stabilized against erosion, applicable erosion **Best Management Practices** shall be used.

Since it is the project design criteria to avoid impact to the spring/stream riparian communities and related wetlands, there will be no **need for a permit application to the U.S. Army Corps of Engineers** under the federal Clean Water Act Section 404. **There are no impacts (effects) to wetlands.**

CONCLUSION

Mitigation measures are required when impacts may occur as a result of the project. The project design includes measures which will avoid impacts. The following is a summary of project measures (found in Project Description) which **avoid adverse impacts (effects):**

- **Spotted owl** - a Limited Operating Period (LOP) for the construction of the pipeline within the Spotted Owl Protected Activity Center (PAC) shall be August 15 to March 1.

- **Pallid bat and Western red bat** - there shall be no pipeline ditch construction within 100 feet of any old-growth tree or any snag (large dead tree) during the months of March to August 15. The Project Biologist shall flag each Old Growth tree within 100 ft. of the route.

- **Townsend's big-eared bat, pallid bat and the red bat** are expected to forage by night. The daytime construction activities of a pipeline project are not expected to disturb the foraging activities of these bats.

- **Erosion-control** on covered pipeline surfaces shall be by spreading chips (or other native dead-or-down branches, leaves or logs) over bare soil of pipeline route on slopes greater than 5%.

The **prevention measure** for the possible impacts to the two springs and their respective riparian areas is the regulation of withdrawals so that measurable **impacts are avoided.**

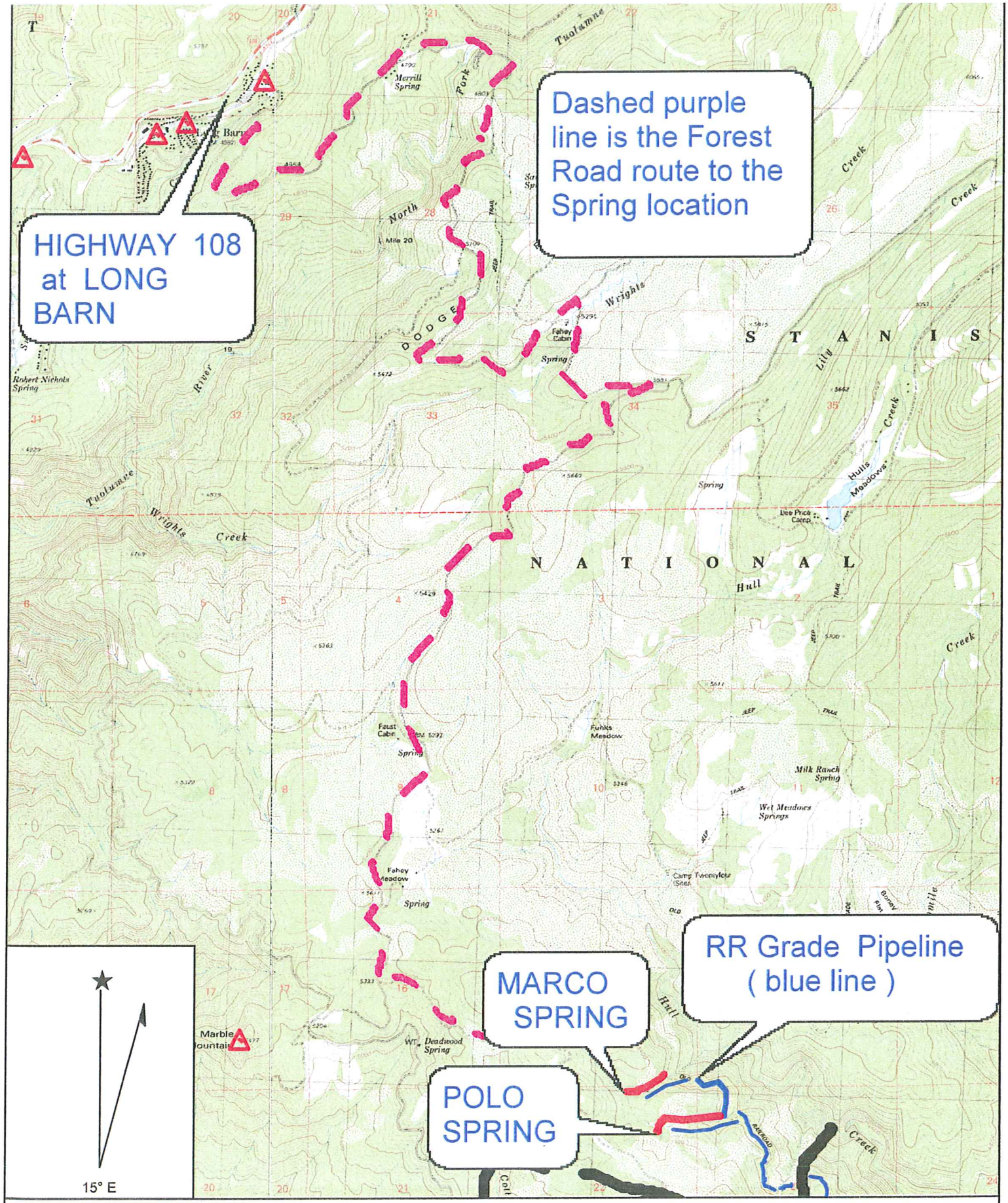
The key to the success of the **Riparian Community Monitoring Plan** is the determination of the "measure" for the measurable impacts. Merely observing the amount of flow coming from an orifice is too simplistic. Water seeps to the surface at various locations in each spring basin. Instead, Wetland Scientist Skenfield and Plant Ecologist Potter established permanent locations for plant community transects on Marco and Polo Streams. The method is standard and is repeatable. The description of the Monitoring Plan is found in Appendix E. On an annual basis the transects shall be surveyed and plant communities described. If plant communities indicate a change to a drier-habitat, the withdrawals will be too much and an impact will be detected. Under the Riparian Community Monitoring Plan an objective shall be to **regulate withdrawals to a limit below that which would cause a change to plant communities.**

APPENDICES

MAPS IN POUCH

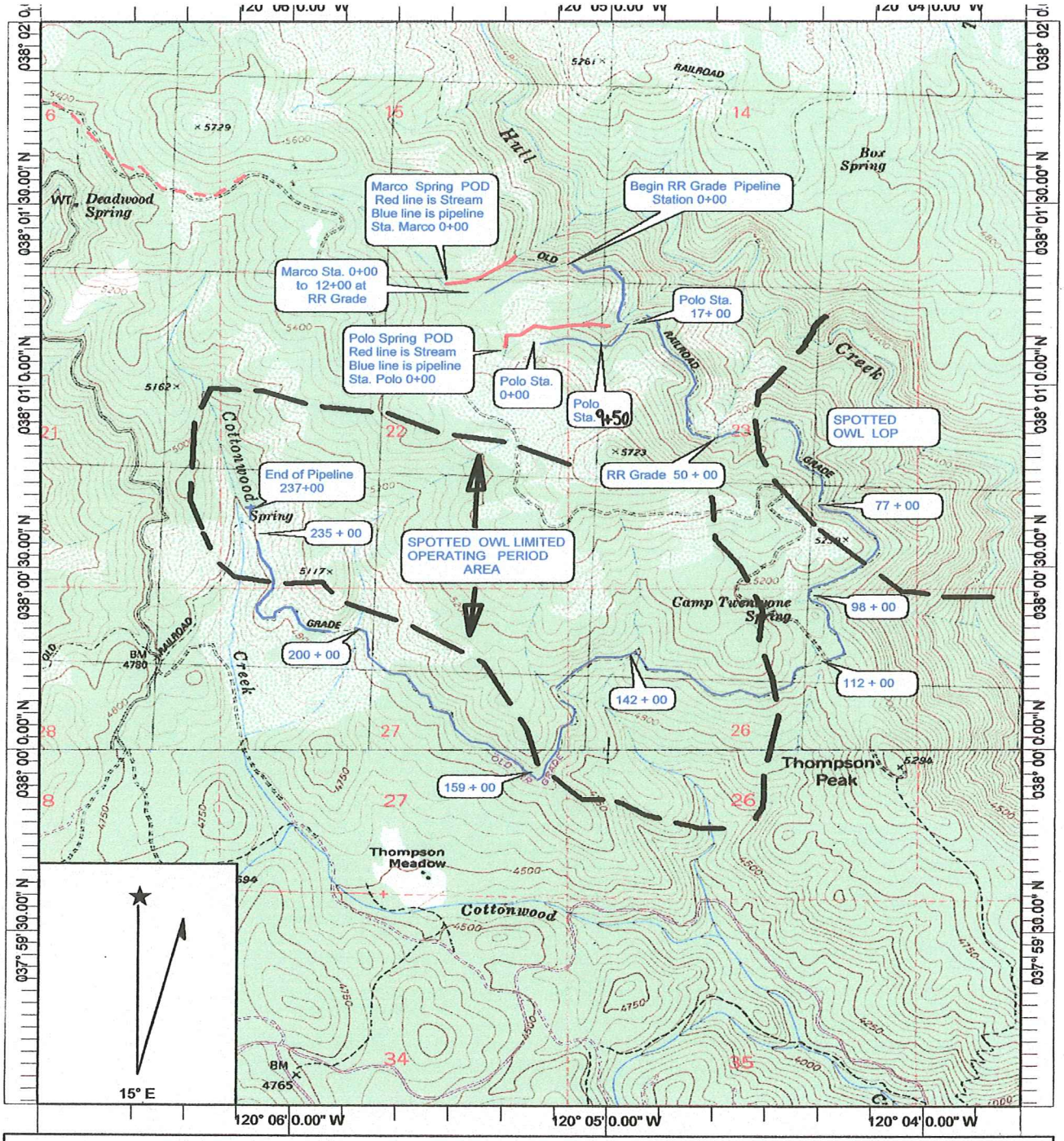
MAPS

- VICINITY
- PROJECT AREA
- BIOLOGICAL RESOURCES
- RIPARIAN MONITORING AREA MAP



Name: HULL CREEK
Date: 12/12/2008
Scale: 1 inch equals 3333 feet

Location: 038° 03' 26.77" N 120° 06' 12.82" W
Caption: VICINITY MAP Sugar Pine Springwater Pipeline

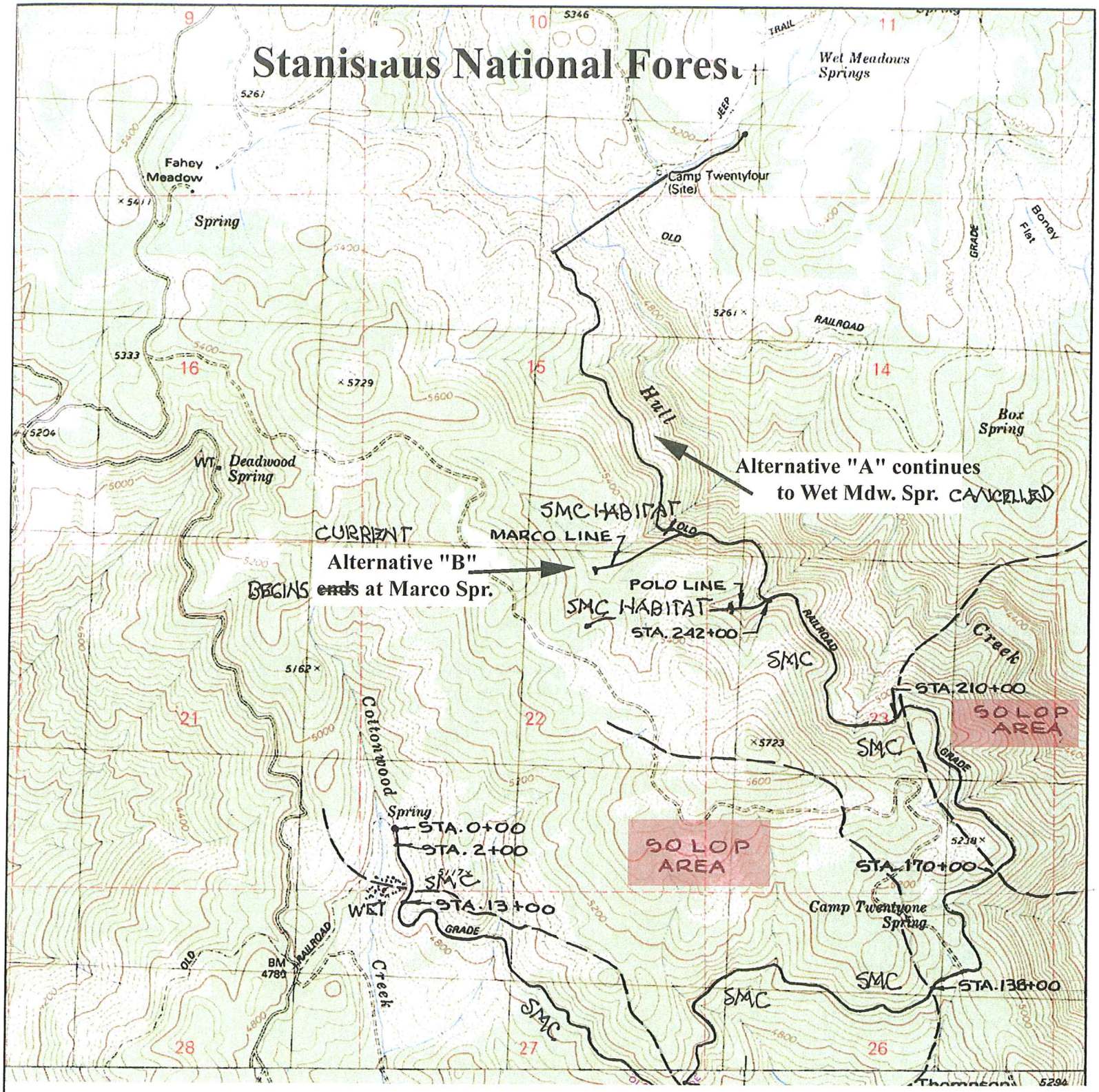


Name: HULL CREEK
Date: 12/10/2008
Scale: 1 inch equals 2000 feet

Location: 038° 00' 30.71" N 120° 05' 14.50" W
Caption: BIOLOGICAL RESOURCES MAP - Sugar Pine Springwater Pipeline, SNF

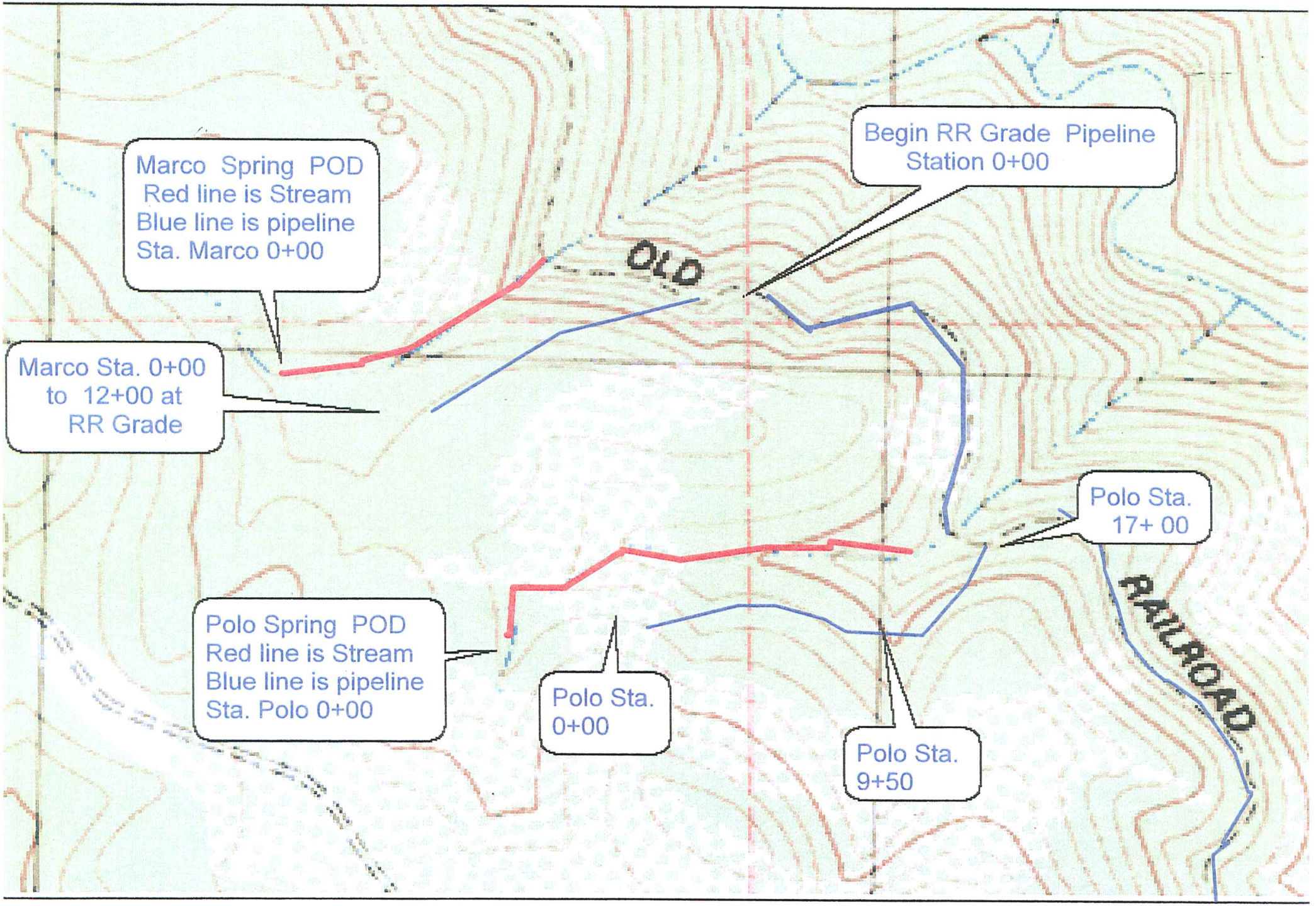
PROJECT MAP

Pipeline route shown as blue line with Stations



BIOLOGICAL RESOURCES MAP

Sugar Pine Spring Water Pipeline Project
Stanislaus National Forest
Application No. 31491 to
State Water Resources Control Board
Map Prepared September 2006
Michael W. Skenfield, Biological and Wetland Consultant



Name: HULL CREEK
Date: 12/10/2008
Scale: 1 inch equals 500 feet

Location: 038° 01' 13.61" N 120° 05' 12.62" W
Caption: RIPARIAN MONITORING AREA MAP - Sugar Pine Springwater Pipeline, SNF

- **B-1 PLANT INVENTORY**
- **B-2 WILDLIFE SPECIES EXPECTED TO BE PRESENT**

PLANT INVENTORY

Woody and Herbaceous Vascular Plants identified by Skenfield and Hollars during floristic surveys on the following dates: May 23, 24 & 25, 2005. June 29 & 30, 2005; July 10*, 11*, and August 6*, 2008. Donald Potter participated on those dates marked with an asterisk only in Marco and Polo Streams. References used: Hickman (ed) 1993; Kartesz 1994; USFWS 1996.

(DICOTS)

Scientific Name	Common Name	Wetland Code**
Aceraceae		
Acer glabrum var. torreyi	Mountain maple	FAC
Apiaceae		
Heracleum lanatum (maximum)	Cow parsnip	FACW
Osmorhiza chilensis	Mountain sweetroot	
Sanicula bipinnatifida	Purple sanicle	
Sanicula tuberosa	Snake root	
Taushia hartwegii	Hartweg's taushia	
Torilis arvensis	Common hedge parsley	
Torilis nodosa	Torilis	
Yabea macrocarpa	Hopalong	
Apocynaceae		
Apocynum androsaemifolium	Bitter dogbone	
Aristolochiaceae		
Asarum hartwegii	Wild ginger	
Asarum lemmonii	Streamside ginger	OBL
Asteraceae		
Adenocaulon bicolor	Trail plant	
Anaphalis margaritarea	Pearly everlasting	
Eriophyllum lanatum croceum	Gold wooly sunflower	
Madia elegans vernalis	Common madia	
Raillardela scaposa	Green-leaved raillardella	
Senecio triangularis	Arrow-leaf groundsel	OBL
Taraxacum officinale	Common dandelion	
Betulaceae		

Scientific Name	Common Name	Wetland Code**
Alnus rhombifolia	White alder	FACW
Corylus cornuta	Beaked hazelnut	
Corylus cornuta var. californica	California hazelnut	
Boraginaceae		
Cynoglossum grande	Hound's tongue	
Hackelia velutina	Velvety stickseed	
Brassicaceae		
Arabis drummondii	Rock cress	
Barbarea orthoceras	Winter cress	FACW
Cardamine breweri	Brewer's bittercress	
Cardamine pachystigma	Stout beaked toothwort	
Erysimum capitatum	Douglas's wallflower	
Streptanthus tortuosus	Mountain jewel flower	
Caprifoliaceae		
Symphoricarpos albus	Snowberry	FACU
Caryophyllaceae		
Silene californica	California indian pink	
Silene lemmoni	Catchfly	
Stellaria crispa	Crisp starwort	FACW
Stellaria media	Common chickweed	FACU
Cornaceae		
Cornus nuttallii	Mountain dogwood	FACW
Dryopteridaceae		
Athyrium filiz-femina	Common ladyfern	FAC
Equisetaceae		
Equisetum arvense	Field horsetail	FAC
Ericaceae		
Arctostaphylos patula	Greenleaf manzanita	

Scientific Name	Common Name	Wetland Code**
Leucothoe davisiae	Sierra dog-hobble	OBL
Pterospora andromedea	Pine drops	
Pynola picta	Wintergreen	
Rhododendron occidentalis	Western azalea	FAC
Sarcodes sanguinea	Snow plant	
Fabaceae		
Lathyrus lanszwertii	Narrow-leaf pea	
Lotus micranthus	Miniature lotus	
Lotus oblongifolius	Torrey's lotus	
Lotus purshianus	Spanish lotus	
Lupinus albicaulis	Narrow-winged lupine	
Lupinus stiversii	Stiver's lupine	
Trifolium repens	White clover	FAC
Vicia americana	Winter vetch	
Fagaceae		
Castanopsis sempervirens	Bush chinquapin	
Quercus chrysolepis	Canyon live oak	
Quercus kelloggii	California Black oak	
Fumiariaceae		
Dicentra formosa	Bleeding heart	
Grossulariaceae		
Ribes cereum	Currant	
Ribes nevadense	Sierra currant	
Ribes roezlii	Gooseberry	
Hydrophyllaceae		
Draperia systyla	Violet draperia	
Nemophila parviflora	Small-flowered nemophila	
Phacelia heterophylla	Vari-leaf phacelia	
Phacelia ramosissima	Branching phacelia	
Hypericaceae		

Scientific Name	Common Name	Wetland Code**
Hypericum anagalloides	Bog St. John's wort	OBL
Onagraceae		
Circea alpina ssp. pacifica	Small enchanter's nightshade	FACW
Clarkia rhomboidea	Tongue clarkia	
Epilobium brachycarpum	Parched fireweed	
Epilobium ciliatum	Hairy willow-herb	FACW
Epilobium glaberrimum ssp. glaberrimum	Glaucous willow-herb	OBL
Polemoniaceae		
Collomia heterophylla	Varied leaf collomia	
Phlox speciosa	Showy phlox	
Polygonaceae		
Rumex acetosella	Sheep sorrel	FAC-
Portulacaceae		
Calyptridium umbellatum	Pussypaws	
Claytonia perfoliata ssp. perfoliata	Miner's lettuce	FAC
Primulaceae		
Dodecatheon jeffreyi	Shooting star	
Trientalis latifolia	Starflower	
Ranunculaceae		
Aquilegia formosa	Crimson columbine	
Ranunculus californicus	California buttercup	FAC
Thatictrum fendleri	Fendler's meadow rue	FACU
Rhamnaceae		
Ceanothus cordulatus	Mtn. whitethorn	
Ceanothus integerrimus	Deerbrush	
Rosaceae		
Chamaebatia foliolosa	Bear clover	
Fragaria vesca	Woods strawberry	
Fragaria virginiana	Wild strawberry	
Horkelia tridentata	Horkelia	

Scientific Name	Common Name	Wetland Code**
Potentilla glandulosa	Sticky cinquefoil	FAC
Prunus emarginata	Bitter cherry	
Prunus subcordata	Sierra plum	
Rosa woodsii	Wood's rose	
Rubus leucodermis	Wild raspberry	FACU
Rubus parviflorus	Thimble berry	FAC+
Rubiaceae		
Galium aparine	Sticky willy	
Galium triflorum	Fragrant bedstraw	
Galium trifolium	Sweet-scented bedstraw	
Sherardia sp.	Sherardia	
Salicaceae		
Salix scouleriana	Scouler's willow	FAC
Saxifragaceae		
Darmera peltata	Indian rhubarb	OBL
Heuchera micrantha	Alum root	
Mitella breweri	Brewer's miter wort	
Scrophulariaceae		
Castilleja applegatei	Applegate's paintbrush	
Mimulus bicolor	Yellow & white monkeyflower	
Mimulus guttatus	Seep-spring monkey flower	OBL
Mimulus leptaleus	Sierra monkeyflower	
Mimulus moschatus	Musk flower	OBL
Mimulus primuloides	Primrose monkeyflower	OBL
Mimulus tilingii	Tiling's monkeyflower	OBL
Mimulus torreyi	Torrey's monkeyflower	
Penstemon laetus	Gay penstemon	
Verbascum blattaria	Moth mullein	
Veronica sp	Veronica	

Scientific Name	Common Name	Wetland Code**
Solanaceae		
Solanum xantii complex	Purple nightshade	
Violaceae		
Viola glabella	Pioneer violet	FACW
Viola glabra	Smooth yellow violet	
Viola purpurea	Mountain violet	
(MONOCOTS)		
Cyperaceae		
Carex amplifolia	Big-leaf sedge	OBL
Carex deweyana ssp. leptopoda	Dewey shortscale sedge	FACW
Carex feta	Green-sheath sedge	OBL
Carex jonesii	Jones/ sedge	FACW
Carex nebrascensis	Nebraska sedge	OBL
Carex senta	Rough carex	OBL
Juncaceae		
Juncus balticus	Baltic rush	FACW
Juncus effusus	Soft rush	OBL
Juncus ensifolius	Three-stamen rush	FACW
Juncus oxymeris	Pointed rush	FACW
Juncus xiphioides	Iris-leaf rush	OBL
Luzula comosa	Hairy woodrush	NI
Liliaceae		
Calochortus minimus	Lesser star tulip	
Dichelostemma capitatum	Blue dicks	
Disporum hookeri	Hooper's fairy bell	
Lilium humboldtii	Humboldt tiger lily	
Lilium parvun	Sierra tiger lily	OBL
Smilacina racemosa	Feather false solomon's seal	FAC
Triteleia ixioides	Pretty face	

Orchidaceae

Platanthera leucostachys	Sierra bog orchid	FACW

Poaceae

Briza maxima	Rattlesnake grass	
Bromus diandrus	Ripgut brome	
Cynosurus echinatus	Dogtail	
Elymus glaucus	Blue wildrye	
Glyceria elata	Tall manna grass	OBL
Muhlenbergia filiformis	Pullup mully	FACW
Poa pratensis	Kentucky bluegrass	FAC
Poa segunda	One-sided bluegrass	FACU
Torreyochloa pallida v. pauciflora	Pale false manna grass	OBL

GYMNOSPERMS

(CONIFERALES)

Cupressaceae

Calocedrus decurrens	Incense cedar

Pinaceae

Abies concolor	White fir
Pinus ponderosa	Ponderosa pine
Pinus lambertiana	Sugar pine
Pseudotsuga menziesii	Douglas fir

**Wetland Indicator Code definitions (from Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: California (Region 0) U.S. Fish and Wildlife Service. Biol. Rep. 88 (26.10) 135 pp.):

OBL	=	Obligate Wetland. Occur almost always in wetlands.
FACW	=	Facultative Wetland. Usually occur in wetlands, but occasionally found in nonwetlands.
FAC	=	Facultative. Equally likely to occur in wetlands or nonwetlands.
FACU	=	Facultative Upland. Usually occur in nonwetlands, but occasionally found in wetlands.
+ or -	=	Intermediate degrees of the indicator.
*	=	Indicates a tentative assignment.

BRYOPHYTES (Moss and Liverworts)

Aulaconmium androgynum

Brachythecium albicans

Brachythecium frigidum

Chiloseyphus polyanthos

Homalothecium nevadense

Kindberaia praelonga

Marchantia polymorpha (Thalloid)

Orthotrichum lyellii

Orthodicranum tauricum

Philonotis fontana

Plagiomnium medium

Pohlia wahlenbergii

Scapania undulata (leafy)

Syntrichia ruralis

FUNGI (Lichen)

Letharia vulpina

Parmelia sulcate

Ramalina farinacea

WILDLIFE SPECIES EXPECTED TO BE PRESENT

The following is a partial list of wildlife species expected to have habitat on and immediately adjacent to old Railroad Grade. The taxonomic order is based on the California Wildlife Habitat Relationships Program, California Department of Fish and Game, October 1999. A "*" before the name indicates those species observed either by direct observation or by signs of their presence (scat, tracks, nests).

AMPHIBIANS

SALAMANDRIDAE (Newts)

California Newt	*Taricha torosa*

PLETHODONTIDAE (Lungless Salamanders)

Ensatina	*Ensatina eschscholtzii*

BUFONIDAE (True Toads)

Western Toad	*Bufo boreas*

HYLIDAE (Treefrogs and relatives)

Pacific Chorus Frog	*Pseudacris regilla*

REPTILES

PHRYNOSOMATIDAE (Lizards)

*Western Fence Lizard	*Sceloporus occidentalis*
Sagebrush lizard	*Sceloporus graciosus*
Side-blotched lizard	*Uta stansburiana*

ANGUIDAE (Alligator Lizards and relatives)

Northern Alligator Lizard	*Elgaria coerulea*

BOIDAE (Boas)

Rubber Boa	*Charina (Lichanura) bottae*

COLUBRIDAE (Colubrids)

Gopher snake	*Pituophis melanoleucus*
California Mountain Kingsnake	*Lampropeltis zonata*
Common Garter Snake	*Thamnophis sirtalis*

VIPERIDAE (Vipers)

*Western Rattlesnake	*Crotalus viridis*

BIRDS

ACCIPITRIDAE (Hawks, Old World Vultures and Harriers)

Sharp-shinned Hawk	*Accipiter striatus*
*Red-tailed Hawk	*Buteo jamaicensis*

ODONTOPHORIDAE (New World Quail)

*California Quail	*Callipepla californica*

COLUMBIDAE (Pigeons and Doves)

Band-tailed Pigeon	*Columba fasciata*
*Mourning Dove	*Zenaida macroura*

STRIGIDAE (Typical Owls)

Great Horned Owl	*Bubo virginianus*
California Spotted Owl	*Strix occidentalis, occidentalis*

TROCHILIDAE (Hummingbirds)

Anna's Hummingbird	*Calypte anna*
Calliope Hummingbird	*Stellula calliope*
Rufous Hummingbird	*Selasphorus rufus*

PICIDAE (Woodpeckers and Wrynecks)

Red-headed Woodpecker	*Melanerpes erythrocephalus*
*Acorn Woodpecker	*Melanerpes formicivorus*
Downy Woodpecker	*Picoides pubescens*
Hairy Woodpecker	*Picoides villosus*
*Northern Flicker	*Colaptes auratus*

TYRANNIDAE (Tyrant Flycatchers)

Olive-sided Flycatcher	*Contopus borealis*
Western Wood-Pewee	*Contopus sordidulus*
Hammond's Flycatcher	*Empidonax hammondii*
Dusky Flycatcher	*Empidonax oberholseri*
Pacific-Slope Flycatcher	*Empidonax difficilis*
*Black Phoebe	*Sayornis nigricans*

CORVIDAE (Jays, Magpies and Crows)

*Steller's Jay	*Cyanocitta stelleri*
Western Scrub-Jay	*Aphelocoma insularis*
*Common Raven	*Corvus corax*

HIRUNDINIDAE (Swallows)

Violet-green Swallow	*Tachycineta thalassina*

PARIDAE (Titmice and relatives)

*Mountain Chickadee	*Poecile gambeli*

SITTIDAE

*White breasted nuthatch	*Sitta carolinensis*

CERTHIIDAE (Creepers)

Brown Creeper	*Certhia americana*

REGULIDAE

*Ruby-crowned Kinglet	*Regulus calendula*

TURDIDAE

*Western Bluebird	*Sialia currucoides*
Hermit Thrush	Catharus *guttatus*
*American Robin	*Turdus migratorius*

BOMBYCILLIDAE (Waxwings)

Cedar Waxwing	*Bombycilla cedrorum*

PARULIDAE (Wood Warblers and relatives)

Nashville Warbler	*Vermivora ruficapilla*
Yellow Warbler	*Dendroica petechia*
Black-throated Grey Warbler	*Dendroica nigrescens*
*Yellow-rumped Warbler	*Dendroica coronata*
MacGillivray's Warbler	*Oporornis tolmiei*
Wilson's Warbler	*Wilsonia pusilla*

THRAUPIDAE (Tanagers)

Western Tanager	*Piranga ludoviciana*

EMBERIZIDAE (Emberizines)

Chipping Sparrow	*Spizella passerina*
Fox Sparrow	*Passerella iliaca*

*Lincoln's Sparrow	*Melospiza lincolnii*
*White-crowned Sparrow	*Zonotrichia atricapilla*
Golden-crowned Sparrow	*Zonotrichia atricapilla*
*Dark-eyed Junco	*Junco hyemalis*

CARDINALIDAE (Cardinals, Grosbeaks and Allies)

Black-headed Grosbeak	*Pheucticus melanocephalus*
Lazuli Bunting	*Passerina amoeba*

FRINGILLIDAE (Finches)

Purple Finch	*Carpodacus purpureus*
Red Crossbill	*Loxia curvirostra*
Pine Siskin	*Carduelis pinus*
Evening grosbeak	*Cocothraustes vespertinus*

MAMMALS

SORICIDAE (Shrews)

Dusky Shrew	*Sorex monticolus*
Trowbridge's Shrew	*Sorex trowbridgii*

VESPERTILIONIDAE (Evening Bats)

Little Brown Myotis	*Myotis lucifugus*
Long-eared Myotis	*Myotis evotis*
Fringed Myotis	*Myotis thysanodes*
Spotted bat	*Euderma maculatum*
Townsend's big-eared Bat	*Plecotus townsendii*
Pallid Bat	*Antrozous pallidus*
Western Red Bat	*Lasiurus blossevillii*

LEPORIDAE (Rabbits and Hares)

Snowshoe hare	*Lepus americanus*

SCIURIDAE (Squirrels, Chipmunks and Marmots)

Long-eared Chipmunk	*Tamias quadrimaculatus*
California Ground Squirrel	*Spermophilus beecheyi*
*Western Gray Squirrel	*Sciurus griseus*
Douglas' Squirrel	*Tamiasciurus douglasii*

GEOMYIDAE (Pocket Gophers)

*Botta's Pocket Gopher	*Thomomys bottae*

MURIDAE

Western Harvest Mouse	*Reithrodontomys megalotis*
Deer Mouse	*Peromyscus maniculatus*
Dusky-footed Woodrat	*Neotoma fuscipes*
California Vole	*Microtus californicus*

ERETHIZONTIDAE

Common Porcupine	*Erethizon dorsatum*

CANIDAE (Foxes, Wolves and relatives)

Coyote	*Canis latrans*

URSIDAE (Bears)

*Black Bear	*Ursus americanus*

PROCYONIDAE (Raccoons and relatives)

Raccoon	*Procyon lotor*

MUSTELIDAE (Weasels and relatives)

Long-tailed Weasel	*Mustela frenata*

MEPHITIDAE (Skunks)	
Western Spotted Skunk	*Spilogale gracilis*
Striped Skunk	*Mephitis mephitis*
FELIDAE	
Mountain Lion	*Puma concolor*
Bobcat	*Lynx rufus*
CERVIDAE (Deer, Elk and relatives)	
*Mule Deer	*Odocoileus hemionus*

SENSITIVE RAPTOR SPECIES REPORT

BY

THOMAS W. BECK, CONSULTING WILDLIFE BIOLOGIST

JUNE 14, 2006

& FEBRUARY 10, 2010

20513 Upper Hillview Drive
Sonora, CA 95370
June14, 2006

Michael W. Skenfield
P.O. Box 747
Murphys, CA 95247

RE: Sugar Pine Spring Water Pipeline, Sensitive Raptor Study

Dear Mr. Skenfield:

I have completed an assessment of habitat for the California spotted owl, great gray owl and goshawk for the area on Mi-wok Ranger District as you requested in your letter of May 29, 2006. I have met with the Forest Service wildlife biologist for the Mi-wok District and the GIS specialist for the Stanislaus National Forest in Sonora to determine areas for these species that are allocated for protection from habitat degradation and disturbance. Spotted owl, goshawk and great gray owl all have land allocations of 300 acres, 200 acres and 50 acres, respectively, that encompass known or suspected nest sites in the recent past. These areas are called "PACs" or protected activity centers. These PACs have seasonal restrictions from activities that create noise during the nesting and post-nest fledgling periods in order to protect against the possibility of causing the nesting failure, ie., the female raptor to abandon the nest and or the young.

There are no goshawk or great gray owl PACs close enough to the proposed project to cause concern for possible impacts, but there are several spotted owl PACs. The PAC protection requirements are to either exclude disturbing activities within ¼ mile of the PAC between March 1 and August 31, called a Limited Operating Period, or to conduct surveys within the PAC to determine if nesting is taking place. If nesting is not occurring during the year of the approved project, the activity can proceed. For 2006 it is currently too late to initiate surveys. Surveys could be done in early 2007 but the cost to conduct the 6-visit survey protocol would probably run between $3,000 and $4,000.

The only locations where the Forest Service would require LOPs is on three sections of forest road 2N54 (old railroad grade) where the pipeline route is within ¼ mile of established spotted owl PACs. These sections are .75miles, 1.1 miles and .25 miles in length, or a total of 2.1 miles. The lateral line up a stream drainage east from the pipeline just south of where the railroad grade intersects Cottonwood Creek is included in the last 0.25 mile LOP section.

Starting from the approximate point of intersection of the pipeline coming from Camp 24 with forest road 2N54, there is about 2.0 miles of railroad grade not affected by LOPs to about the center of section 23; then after the first LOP section there are two more clear sections consisting of 0.5 miles and 1.1 miles, alternating with the LOP sections, with a total of 3.6 miles of road unconstrained by LOP requirements. There are several short lateral lines extending up small drainages from the pipeline in the first 2.0 mile section

that are similarly not affected by the LOP areas. There are also no PACs that require LOPs in the vicinity of the pipeline that would carry water from Wet Meadow Spring and Camp Twenty-four and across Hull Creek.

I am not aware of whatever discussions may have taken place regarding vegetation clearing between Wet Meadow Springs or the crossing of Hull Creek with the Forest Service and the California Department of Fish and Game. This report strictly pertains to terrestrial raptors listed as Sensitive by the Forest Service that could be impacted by noise and disturbance from the pipeline route construction. The only species documented to occur close to the proposed route is California spotted owl. Adherence to the standard LOPs for the two PACs that are adjacent to Forest Road 2N54 is all the mitigation that is necessary. This mitigation will result in a "less than significant impact" to the California spotted owl.

Since there are 3.6 miles of roadway where pipeline work could proceed prior to August 31 and only 2.1 miles that would have to be done after August 31. I recommend scheduling the work to conform to these dates rather than attempting to conduct surveys in the hope that all work could proceed earlier. If the surveys were to find a pair of nesting spotted owls, the limited operating season would have to be followed anyway so there is a chance that the proponent would bear the cost of the surveys without any subsequent benefit to the project.

Attached is a map showing the two spotted owl PACs close to forest road 2N54, the ¼ miles buffer zones that require disturbance exclusion between March 1 and August 31, and the sections of the pipeline route that are affected by LOP requirements.

Sincerely yours,

Thomas W. Beck
Consulting Wildlife Biologist

February 10, 2010

Michael Skenfield
P.O. Box 747
Murphys, CA 95247

RE: Sugar Pine Spring Water Project

Dear Mr. Skenfield:

This is an update of the assessment I provided you for terrestrial wildlife concerns related to water development by the Sugar Pine Water Company on the Mi-wok District of the Stanislaus National Forest dated June 14, 2006. I have reviewed Forest Service records, the CNDDB records you provided and consulted with Forest Service GIS personnel and wildlife biologist Marcie Baumbaugh of the Mi-wok District for this update.

Since the proponent has removed the section of pipeline from Camp 24 to Marco Spring in his project proposal, the length of route that is outside of LOPs (limited operating periods) has decreased. The pipeline from springs Marco and Polo along forest road 2N54 to Cottonwood Creek is the same as before and the two spotted owl PACs it passes through or near have not changed. Therefore the 2.1 miles of pipeline route that would be affected by the Forest Service LOPs is the same as described in my 6/14/06 report. Refer to the map provided in that report for the sections of pipeline route that are subject to the LOP. A change from 2006 is that the Forest Service LOP for spotted owl has been modified from March 1-August 30 to March 1–August 15. This provides two more weeks of summer to install the pipeline if my recommendation to schedule work to after the LOP dates are followed.

An additional PAC for northern goshawk was established by the Forest Service mostly east of Hull Creek/Clavey River since my 2006 report, but the distance from the proposed pipeline route is far enough that an LOP for goshawk will not affect the project.

I also reported at that time the absence of known great gray owl activity in the vicinity of the proposed project. That has not changed but there is potential great gray owl nesting habitat at Thompson Meadow just south of the pipeline route. The meadow is small and in poor ecological condition from past overgrazing and I believe its suitability for GGO is low. Surveys conducted in the 1990s failed to document presence. The pipeline route is beyond the likely nesting areas adjacent to the meadow and if it is installed late in the summer to avoid spotted owl LOPs, any potential disturbance to GGOs would be effectively mitigated.

You indicated that the State of California had questions regarding species that were not included in your chart of special status animals with possible habitat on the project site. These were wolverine, bald eagle, great gray owl and Sierra Nevada snowshoe hare. I reviewed Forest Service sighting records which are more complete and up to date than CNDDB records you provided for these species, and they have been added to the table. Of the species added only the Sierra Nevada snowshoe hare could be considered to be present in the project area with some certainty, based on sightings and habitat. Because of Thompson Meadow and surrounding forest the presence of great gray owl cannot be ruled out. Any CEQA or NEPA documents will have to discuss possible impacts on these species.

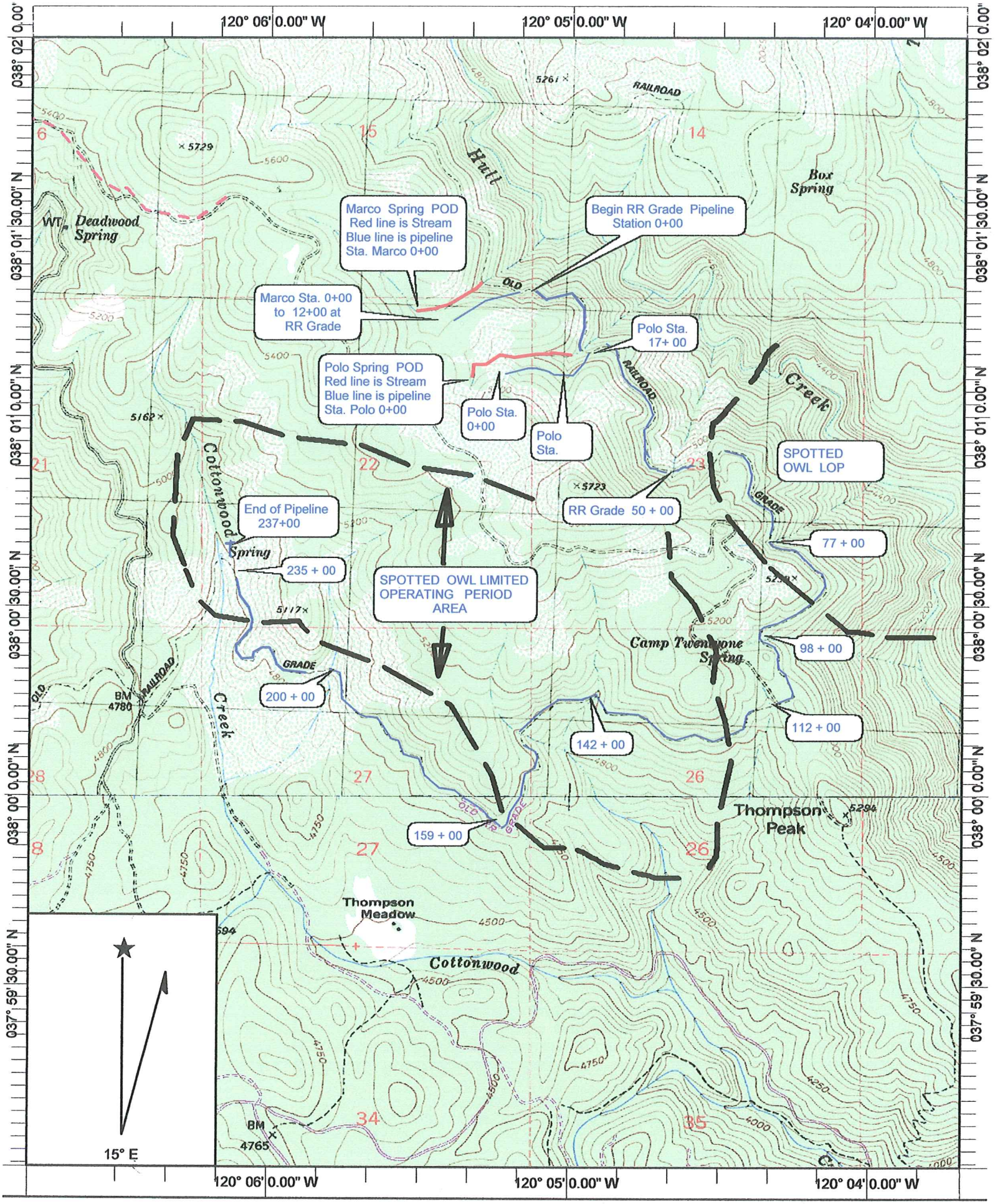
If you have need of further information on these or other species of interest do not hesitate to contact me.

Sincerely yours,

Thomas W. Beck

Consulting Wildlife Biologist

20513 Upper Hillview Drive
Sonora CA 95370



Name: HULL CREEK
Date: 12/10/2008
Scale: 1 inch equals 2000 feet

Location: 038° 00' 30.71" N 120° 05' 14.50" W
Caption: BIOLOGICAL RESOURCES MAP - Sugar Pine Springwater Pipeline, SNF

MID-ELEVATION AMPHIBIAN SURVEY REPORT

BY

HAROLD E. BASEY, BIOLOGICAL CONSULTANT

JANUARY 2010

Mid-elevation Amphibian Survey
Marco/Polo Springs and Emanating Streams
Sugar Pine Spring Water Project, Tuolumne County, California
Revised January 2010

ENVIRONMENTAL SETTING

The amphibian survey was conducted within two small drainages originating from springs one quarter mile apart. The northern spring is named Marco and the southern spring is named Polo. From each spring a small perennial stream flows east-northeast to Hull Creek (an Upper Pereannial Stream). The streams are called "Marco Stream" and "Polo Stream" respectively. The elevation of the Study Area ranges between 5,300 and 5,400 feet above mean sea level.

The general plant/animal habitat is the Sierra Nevada Mixed Conifer with White Fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), and Incense-cedar (*Calocedrus decurrens*) being the dominant representatives in these stream drainages. The Study Area lies within each individual spring-stream area described as follows:

Marco: the spring seeps from a wet perennial meadow without pools and immediately flows down-gradient in a narrow stream one to two feet in width. After 300 feet a seepage feeds into the stream from a steep bank on the north side. Beginning at the spring the vegetation is dominated by sedges (*Carex* species), then changes into an Incense-cedar – White Alder (*Alnus rhombifolia*) riparian habitat for 200 feet, then into White Alder – Western Azalea *(Rhododendron occidentalis*) riparian habitat for the remaining Study Area length of 500 feet. After this point the stream cascades at a very steep gradient through dense riparian thickets to eventually intersect with Hull Creek. The staff of the Water Rights Division agreed that the foregoing point was an appropriate location to end the survey (a similar decision was made for Polo Stream).

Polo: the spring flows from an orifice at the base of a slope and spreads out into an inundated/saturated basin. The basin is sloped into the stream which begins within 25 feet and cascades downslope in a narrow channel ranging from one to three feet in width. At approximately 250 feet the stream passes through a small seepage/perennial wetland emanating from a slope on the south side. The riparian habitat dominating this portion of the channel is the White Fir – Incense-cedar – Senecio (*Senecio triangularis*) type. At between 500 and 800 feet downstream from the spring, the stream cuts through a series of sloping wetlands (riparian graminous vegetation). At between 800 and 900 feet below the spring, the stream passes through an old pond excavated for filling water trucks. The pond is approximately .04 acres (30 feet wide by 60 feet long) and ranges from one to three feet maximum depth.

The pond is in a very cold microclimate. It is shaded by riparian trees, faces east within a deep, narrow stream canyon, and would receive summer sun only for a brief period of the morning hours. Water temperatures are cold, ranging from 33 degrees Fahrenheit in winter to 50 degrees Fahrenheit in summer.

The stream continues downslope at a width of two to three feet for a distance of 850 feet. At this point a tributary intermittent stream named Burney Creek connects from the south. For the final 250 feet (to the end of the Study Area), the stream cuts through an alluvial flat of perennial and seasonal wetland. No ponds or pools are present. The overstory habitat for the reach of stream from the pond to the end is the White Fir-Incense-cedar-Senecio-White Alder riparian complex.

Both the Marco Stream and the Polo Stream canyons are shaded, cold, damp microclimates with mosses and lichens on many substrates (rocks, down logs, tree trunks).

AMPHIBIAN SPECIES FOR CONSIDERATION

The California Natural Diversity Database (CNDD) was consulted for records within a five-mile radius of the Marco and Polo Springs. This included searching the following quadrangles: Hull Creek, Duckwall

Mountain, Cherry Lake North, Cherry Lake South, and Strawberry. In addition, the U.S. Fish and Wildlife Service (USFWS) predictive species list was reviewed for the above quadrangles.

Amphibian species which should be considered based on both database sources are:

California Red-legged Frog, *Rana draytonii* (old name *Rana aurora draytonii*). A federal Threatened and California Department of Fish and Game (CDFG) Species of Special Concern. This species was last reported in 1950 at 5,700 feet elevation in Woods Creek (CNDDB, Cherry Lake South Quadrangle). The USFWS predictive database shows the red-legged frog as having historic habitat within this area. None have been reported from Tuolumne County since before 1990.

Foothill Yellow-legged Frog, *Rana boylii.* CDFG Species of Special Concern. Species was last reported seen in 1993 at 3,800 feet elevation in the stream passing through Bull Meadow (CNDDB, Duckwall Mountain Quadrangle).

Mountain Yellow-legged Frog, *Rana muscosa.* A U.S. Forest Service [USFS] Sensitive Species. This species is listed as Endangered by the USFWS **only** in Southern California. This species has, in part, been re-described as the Sierra Nevada Yellow-legged Frog, *Rana sierrae*, (Vredenburg 2007.) and is being presented by the USFWS as a "Candidate for Listing." The species is considered a Species of Special Concern by the CDFG. The species, as *Rana muscosa,* is shown on the USFWS predictive list for the Cherry Lake North and the Strawberry Quadrangles.

Yosemite Toad, *Bufo canorus.* This species has been renamed *Anaxyrus canorus* (Crother 2008). It is a federal Candidate species. This species is being presented for listing by the USFWS. It is not recorded as a sighting in the quadrangles presented to the CNDDB. The USFWS predictive list shows the species for the Cherry Lake North and Cherry Lake South Quadrangles.

SURVEY METHODS

The names of amphibian species for consideration come from database reports and predictions covering a wide elevation range and general habitat types. The first step in the survey was to visit the Marco and Polo Streams to determine elevation, temperatures and specific aquatic habitat descriptions. While this was being done the protocol for aquatic amphibian surveys was being carefully followed (Fellers1995) on the chance some evidence of occurrence could be observed. Any of the above species for consideration could be eliminated from further survey if the elevation range and microhabitat characteristics are highly unlikely for the species occurrence. The following is a discussion and evaluation of whether or not the species should warrant further survey:

California Red-legged Frog: Most of the literature (Elliott 2009, Gee 2008, Basey 1976, Basey 1980) indicate that its occurrence is below 5,000 feet elevation. The project site is 5,300 to 5,400 feet elevation – above the species known range. The CNDDB report for Woods Creek in 1950 records an elevation of 5,700 feet which is contrary to most recent references. Procedures required by the responsible agency (USFWS) are provided in their "Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog" dated August 2005. The first requirement under the Guidance is to conduct a "Site Assessment" of all potential habitat within a one-mile-radius of the project area. However, since there was no suitable aquatic breeding habitat and no suitable upland (or riparian) habitat, and the study area is well above the elevation of any known occurrence of the species within the last twenty or more years, the Site Assessment was determined to be unnecessary.

Foothill Yellow-legged Frog: The range for this frog species is from the low Sierra Nevada foothills to 6.000 feet elevation (Stebbins 2003, Zweifel 1955). The project area is 5,300 to 5,400 feet. This species was surveyed for but their was no evidence of its presence.

Mountain Yellow-legged Frog: The CNDDB shows no reported records of this frog in the quadrangles around the project site. The general range for this species does include the study area. Although there is

no strict protocol established by the USFWS for the surveying of the MYLF, the authors were advised by the USFWS office in Sacramento to follow the publication *A Standardized Protocol for Surveying Aquatic Amphibians* by Gary M. Fellers. This protocol was used throughout the survey. The main recommended approach in the protocol is to walk quietly, with binoculars, and watch for any movement, eggs, tadpoles, basking adults or any other signs of the frogs.

Yosemite Toad: This species occurs in the higher elevations of the central Sierra Nevada. The elevational range of the species is 6,400 to 11,300 feet (Karlstrom 1962, Basey 1980, Stebbins 2003.). The species is adapted to warm water ponds. These snow melt ponds occur in the open (no shade) and in the early summer when high elevation sunlight intensity is greatest. There was no habitat or potential habitat for this species in the study area.

FINDINGS

The field investigation included searching all aquatic habitat for frog eggs (single or masses), tadpoles, basking adults and active adults. No eggs, tadpoles, adults or any other evidence of the presence any frog, treefrog, or toad species was observed. Based on my one-day survey of both Marco Spring and Polo Spring, and based on the very cold water temperatures, the cold, damp shaded riparian area, and the lack of suitable warm pools in or along the small streams, I conclude there is no habitat or presence of any frog species in the study area. Particularly there is no potential habitat or presence of the California Red-legged Frogs or the Sierra Nevada Yellow-legged Frogs. Over the many years that I have conducted amphibian surveys (searches) I have not found any ranid (frog) species living in these cold-small-stream conditions. I concluded, long ago, that very small streams do not provide adequate protection from terrestrial predators (Raccoons etc.) for adult or larval frogs. The Sierra Newt, *Taricha torosa sierrae*, an amphibian that does occur in cold-small-stream conditions in the Sierra Nevada is orange in color as an advertisement to predators that it is very poisonous. It is further concluded, therefore, that this project would have no effect on California Red-legged Frogs or Sierra Nevada Yellow-legged Frogs.

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Statement of Qualifications

Harold E. Basey, Biological Consultant

January 2010

Certification: Certified botanical and wildlife consultant by the Tuolumne County Community Development Department. Has also been approved as a biological consultant in many more counties, and by the U.S. Forest Service, U.S. Fish and Wildlife Service and the California Department of Fish and Game.

Recent Experience and training dealing with amphibians:

2008. Survey For Limestone Salamanders, Midpines Bible Church Site, Mariposa County, CA.

2008. Mountain Yellow-legged Frog Survey at Kirkwood Mountain Resort. Alpine County, CA.

2008. Attended a workshop addressing survey methods for pond inhabitants (California Tiger Salamander, California Red-legged Frog and Western Pond Turtle). Laguna de Santa Rosa Foundation, Santa Rosa, California.

2007. Site Assessment for the California Red-legged Frog, Yosemite Cattle Ranch, Highway 120, Tuolumne County, California.

2006. California Tiger Salamander, Site Assessment, Bandoni Property, Snelling, Merced County, California.

Past Experience: In the 1970s selected as a research scientist by the U.S. Forest Service to lead their Sierra Nevada efforts in amphibian and reptile studies pursuit to the U.S. Endangered Species Act. The result was a landmark wildlife publication (see references).

Professional Careers: Thirty school years as a college professor of biology at Modesto Junior College, Modesto, California. Biology, zoology, botany, and Sierra Nevada ecology classes were taught. Thirty-one summers working for the U.S. National Park Service in Sequoia and Kings Canyon National Parks as a supervisory ranger-naturalist. The job required knowledge of both plants and animals of the Sierra Nevada.

Formal Education: B.A. and M.A. degrees in biology (thesis title "Ecology of a Sierra Nevada Meadow"). A second M.A. degree in zoology (thesis title "Coat color changes in Long-tailed Weasels on the Western Slope of the Sierra Nevada"). This second master's degree was the result of a National Science Foundation (NSF) scholarship to the University of South Dakota.

Organizational Memberships: Life member of the California Academy of Sciences. Life member of the Society for the Study of Amphibians and Reptiles (society publishes *The Journal of Herpetology*). Life member of The Herpetologists' League (a learned society that publishes the scientific journal *Herpetologica*). Member of Declining Amphibian Populations Task Force (DAPTF), California-Nevada Working Group.

Publications: (see references).

Basey's Sierra Nevada Journal. (An ecological study of the Sierra Nevada). A college textbook.

Discovering Sierra Reptiles and Amphibians.

California Wildlife and Their Habitats: Western Sierra Nevada (amphibian and reptile portion). U.S. Forest Service. General Technical Report PSW-37.

Military Service: Served his country overseas for two years in the 10th Mountain Infantry Division – honorable discharge.

RIPARIAN COMMUNITY MONITORING PLAN

MARCO AND POLO STREAM BASINS

SUGAR PINE SPRING WATER PIPELINE PROJECT

NOVEMBER 2008

CONTENTS:

PLAN DESCRIPTION

The basic assumption of the project design is that **diversions will not cause a measurable impact** to the Marco and Polo Springs and their associated riparian areas. More specifically, the riparian communities inventoried under the Greenline Method, the vegetation in the Vegetation Plots, and the wetland characteristics sampled under the Wetland Sample Plot method shall not show a **measurable change** that can be attributed to diversions.

The measurable change in the Greenline Method would be a change occurring that shifts from riparian communities to upland communities. Under the Vegetation Plot Method the change would be from a prevalence of wetland species to a prevalence of upland species. And, finally, under the Wetland Sample Plot Method, the vegetation parameter would change from hydrophytic dominance to upland dominance.

Under this proposed plan, monitoring shall occur annually in July for a period of five years. Each of the baseline surveys shall be repeated and results reported to the State Water Resources Control Board. The report shall describe methodology and results. After reviewing the report, the SWRCB shall determine (1) whether or not impacts are occurring, and (2) if there are impacts, what action is needed to maintain a condition of "no measurable impacts."

The Monitoring Area Map is found in Appendix A. The Baseline Surveys are described in the following sections of this Appendix. The field data sheets are included as is the Plant Habitat Map that illustrates the location and extent of the riparian communities.

The first Monitoring Survey shall occur during the month of July following completion of the diversion project. The report of the survey shall be submitted to the SWRCB within 60 days after the survey. The SWRCB is expected to respond with any recommendations for a change in the diversion rates no later than March of the succeeding year.

BASELINE SURVEYS

FOR

MONITORING PLANT HABITAT CHANGES

GREENLINE METHOD

GREENLINE METHOD

Survey Description and Results Summary

Donald A. Potter, Plant Ecologist

Environmental setting

Two drainage areas encompass the project area. Each originates in a basin of less than 100 acres, and each contains a permanent stream. Both (designated for project purposes as the Marco and Polo sections) are small, first order, spring fed streams with a yearlong flow of water that fluctuates little in volume during most years. Bank full widths are generally less than 7 feet, and summer flows are generally less than a foot wide. Depths are less than 6 inches in most instances. Stream beds are composed of boulders and cobbles in sections with steeper gradients and gravels and sands in sections with lower gradients. Elevations are around 5,400 feet where precipitation occurs primarily as rain. Most of the dry season flow comes from underground sources above and adjacent to the two stream sections. Both drainages have a history of stand disturbances resulting from stand replacing fires, logging, road construction, reforestation, cattle grazing, and ATV use. Disturbance from insect and disease appears to remain at endemic levels, and flooding events in both drainages appears to be rare.

The riparian vegetation along both drainages is primarily composed of forested communities. In the Polo section one small meadow and one small pond occur, and the Marco section begins with a very small meadow complex. In addition, several small seeps occur adjacent to and flow into each section. Otherwise, the riparian vegetation adjacent to both streams is composed of mixed hardwood and conifer forests. These riparian forests are quite narrow. They generally range between only 5 to 10 feet on each side of the stream before transitioning to upland forests. The vegetation occupying each of these settings are long-term, stable communities which have been described elsewhere (Potter, 2000).

Methods

The objective of the monitoring project is to detect changes in the vegetation resulting from possible changes in the water table. Detecting vegetation change in riparian areas that can be attributed directly to changes in environment is difficult throughout most of the west due to the previously mentioned disturbance patterns and climatic variation. Small, plot based sampling of change has been used effectively in areas of low growing more or less homogeneous vegetation such as meadows and shrub lands.

However, plot based sampling, particularly for change detection of low growing herbaceous vegetation in small, confined riparian areas has limited application in forested communities with varying stand structures. The forested canopy has considerable effect on understory species composition and cover. To obtain an estimate of changes in cover for small herbaceous vegetation, for example, is confounded by the presence of and changes in various layers of shrubs and tree canopy. Assigning cause to effect becomes nebulous at best.

An approach to monitor riparian vegetation that has been used elsewhere in the west is the Greenline method developed by Winward (Winward, 2000). This is a sampling and analysis procedure designed to monitor vegetation change in riparian and wetland environments. It focuses on changes in plant community rather than changes in individual plants. It is relatively easy to apply, and can be done quite rapidly. The method usually contains three components: determining Cross section composition, Greenline composition, and Woody species regeneration.

The Cross section composition element involves a step transect recording plant communities across the riparian corridor at specified distances along a stream or river. Riparian areas are generally composed of a mix of stands, and the Cross section transects are designed to quantify the percent of each community in a particular riparian complex such as a meadow. Since the riparian corridor along both the Marco and Polo sections is so limited in extent, and since the vegetation is essentially the same from one side of the corridor to the other, it was decided this element would provide little additional information to that provided by the other elements, and it was not used in this project.

The Greenline composition element involves recording plant communities along the Greenline (the area that perennial vegetation forms a lineal grouping of plant communities on or near the waters edge) for a prescribed distance on each side of a stream or river. The objective is to determine the percentage of the stream edge being occupied by each plant community. Most often the Greenline occurs at the bankful level. An initial reconnaissance showed that since the riparian corridors are so narrow in these drainages, and the Greenlines would be so close together, both sides of the streams would identify the same community at the same places. Since little information would be gained by recording both sides, it was

determined to simply perform a step transect down the center of each stream and record plant community composition by distance along the transect.

The Woody species regeneration element involves recording regeneration of woody species. . It normally uses a six foot wide belt on both sides of the stream. This is done by utilizing a 6 foot pole with the center on the Greenline for the length of the Greenline transect. This element is designed to record changes in recruitment of woody species as a result of changes to the stream. The narrowness of the streams in the project area required the center of the stream to be used to set the inside edge of the belt, a modification discussed by Winward (Winward, 2000). Due to the irregular stand structure of the forested communities involved in both the Marco and Polo sections, the Woody species regeneration element recorded the numbers of all woody species by size class in addition to regeneration. This was designed to provide information on changes in species composition and size class distribution (including mortality), in addition to regeneration.

Species composition

A list of all species encountered in the survey is attached. As is true with most collections the accuracy of determination is dependent on the material collected. A few determinations had to be based on a judgement call. These and the reasons are noted in the list. Both sections contain high numbers of wetland species. On the Polo section 54% of the species are obligate or facultative wetland species. On the Marco section 47% have the same listing. In addition there are 5 species in both sections listed as facultative species which are commonly found in riparian settings at these elevations in the Sierra Nevada. They are Athyrium filix-femina, Equisetum arvense, Ranunculus californicus, Rhododendron occidentalis, and Rubus parviflorus.

Greenline analysis

1. Successional status

Since the vegetation occurring along both drainages are stable, persistent, plant communities that have been described and occur over large areas in the central and southern Sierra Nevada, the present analysis can consider them as a base line from which to monitor change. None of the communities can be considered dominated by non-native species, and in an ecological context

they can be considered late seral. From a management perspective they probably represent desired conditions.

2. Greenline composition

The Greenline transect down each stream indicates the current composition by plant community. The preponderance of mixed conifer/hardwood forests in the riparian corridor can be seen. On the Polo section 30% are non tree dominated communities. On the Marco section only 5% are non tree dominated. Several small seeps dominated by herbaceous vegetation as well as one seep dominated by Alnus rhombifolia are included within the tree dominated communities.

Polo

Plant community 1/	% Composition
Abco-Cade27/Setr	63
Setr/Atfi	5
Cade27-Alrh	7
Mid Elevation Misc	
Riparian Graminoid	25

Marco

Plant community	% Composition
Cajo	6
Cade27-Alrh	54
Alrh/Rhoc	40

3. Woody species regeneration

Polo

Number of trees 2/

	Size class 3/				
Species	1	2	3	4	5
Abies concolor	7	17	1	4	3

Alnus rhombifolia	3	38	13	3	11
Calocedrus decurrens	24	42	7	2	7
Pinus jeffreyii	0	0	1	0	2

Number of shrubs 4/

	Size class 5/			
Species	1	2	3	4
Castanopsis sempervirens	0	5	0	0
Cornus nuttallii	0	5	0	0
Leucothoe davisiae	15	19	0	0
Ribes nevadense	11	12	0	0
Ribes roezlii	7	0	0	0

Marco

Number of trees 2/

	Size class 3/				
Species	1	2	3	4	5
Abies concolor	32	1	0	0	1
Alnus rhombifolia	83	42	28	5	16
Calocedrus decurrens	14	24	2	0	3
Pinus jeffreyii	0	1	0	0	0

Number of shrubs 4/

	Size class 5/			
Species	1	2	3	4
Castanopsis sempervirens	3	0	0	0
Corylus cornuta	1	1	2	0
Cornus nuttallii	12	76	39	5
Leucothoe davisiae	4	2	0	0
Rhododendron occidentalis	5	33	5	0
Ribes nevadense	5	17	2	0
Ribes roezlii	1	2	0	0

Graphs showing these relationships are attached.

1/ Potter, 2005.
2/ Trees forking below 4.5' ht counted as two or more stems.
3/ 1=<6' Ht.
2=6'ht-<10"DBH
3=>10"DBH-<18"DBH
4= >18"DBH
5= Mortality
4/ Layering occurs in several species. Stems separated by >2' are counted separately. Those separated by <2' are considered one individual.
5/ 1=<1' Ht.
2=>1'-<4' Ht.
3=>4' Ht.
4= Mortality

References

Potter, Donald A. 2005.Riparian plant community classification, west slope, central and southern sierra nevada, california. R5-TP-022. Vallejo, CA. Pacific Southwest Region. Forest Service, U.S. Department of Agriculture. 630 p.

Winward, Alma H. 2000. Monitoring the vegetation resources in riparian areas. Gen. Tech. Rep. RMRS-GTR-47. Ogden, UT:Rocky Mountain Research Station, Forest Service. U.S. Department of Agriculture. 49 p.

GREENLINE COMMUNITIES DESCRIPTION

The following letter abbreviations were used in the Greenline Survey to define and describe plant communities.

Abbreviation	***Definition / Description***
ABCO - CADE 27 / SETR	Community dominated by white fir and incense cedar with arrowhead butterweed as a common groundcover.
CADE 27 - ALRH	Dominated by incense cedar with an understory of white alder lining the stream channel. Typically open at the shrub level.
CAJO Meadow	A fine meadow cover dominated by Carex jonesii
CAVE / -	Fresh emergent wetland dominated by sedge.
MID-EL-MISC-RPGRAM	Mid-elevation miscellaneous riparian gramineous vegetation. Dominant plants - tall manna grass, sedge species, rush species and a scattered assemblage of wetland forbs such as musk flower and winter cress. A wet-meadow community.
SETR - ATFI	A tall groundcover of a damp microclimate such as is found along seeps, springs or slow-moving, low-gradient streams.

SPECIES ABBREVIATIONS

The following four-letter plant species abbreviations were used in the Greenline Survey.

Abbreviation	***Definition/Scientific name***	***Description/Common name***
ABCO	AB = *Abies*, CO = *concolor*	White fir
ADBI	AD = *Adenocaulon*, BI = *bicolor*	Trail Plant
ALRH	AL = *Alnus*, RH = *rhombifolia*	White alder
ASLE	AS = *Asarum*, LE = *lemmonii*	Wild ginger
ATFI	AT = *Athyrium*, FI = *filix-feminia*	Lady fern
BAOR	BA = *Barbarea*, OR = *orthocerus*	Winter cress
CADE	CA = *Calocedus*, DE = *decurrens*	Incense cedar
CAJO	CA = *Carex*, JO = *jonesii*	Sedge
CAVE	CA = *Carex*, VE = *vescaria*	Sedge
DRSY	DR = *Draperia*, SY = *systyla*	Draperia
EPGL	EP = *Epilobium*, GL = *glaberinum*	Fireweed
GLEL	GL = *Glyceria*, EL = *elata*	Tall manna grass
JUOX	JU = *Juncus*, OX = *oxymeris*	Pointed rush
MIMO	MI = *Mimulus*, MO = *moschatus*	Musk flower
PLLE	PL = *Platanthera*, LE = *leucostachys*	Orchid
RHOC	RH = *Rhododendron*, OC = *occidentale*	Western azalea
RUPA	RU = *Rumex*, PA = *paucifolius*	Alpine sheep sorrel
SETR	SE = Senecio, TR = triangularis	Arrowhead butterweed

APPENDIX E-2-A

FIELD DATA SHEETS

- Progression of Communities on Greenline

  Marco Spring

  Polo Spring

PROGRESSION OF COMMUNITIES ON GREENLINE

LOCATION: MARCO DATE: 7-11-08

2.5' / STEP 145 STEPS = 363'

COMMUNITY	STATION	STEPS	COMMENTS
CAJO	SP2	0	Small meadow within the CADE 27-ALRH community. Moss community along stream bank.
CADE 27-ALRH		12	
CADE 27-ALRH		60	Cedar log across stream.
CADE 27-ALRH		90	Painted stake, no number.
CADE 27-ALRH		100	Dense alder, young CADE.
ALRH/RHOC		115	Changes community.
ALRH/RHOC			
ALRH/RHOC		123	Stake 527 nearby.
ALRH/RHOC		140	Stream cascades to the south. PVC pipe in stream. Alder mortality, small stems. Large seep comes in from northwest (ATFI+RHOC dominate).
ALRH/RHOC		180	Dogwood repro. along. str. 10 dead alder 4"-10" diam.
ALRH/RHOC		190	Stake 529 nearby. Stream drops off in steep gradient. Sam Plant Community continues. Survey ends.

Michael W. Skenfield

PROGRESSION OF COMMUNITIES ON GREENLINE

LOCATION: POLO DATE: 7-10-08

2.5' / STEP 145 STEPS = 363'

COMMUNITY	STATION	STEPS	COMMENTS
ABCO-CADE 27/SETR		1-17	Spring basin open U/S.
ABCO-CADE 27/SETR	176	17	Begin dense ASLE.
ABCO-CADE 27/SETR		32	Along stream.
ABCO-CADE 27/SETR		43	Mortality of small ALRH.
ABCO-CADE 27/SETR	177	60	
ABCO-CADE 27/SETR	178	80	23' south of stake.
ABCO-CADE 27/SETR		91	Dominant Gr.Cov. RUPA.
ABCO-CADE 27/SETR		95	Mortality of small ALRH stream flattens into wetland dominant wet.cover MIMO.
ABCO-CADE 27/SETR		101	Dominant Gr.Cov. ASLE 50%, DRSY 50%. 10"ALRH dead.
ABCO-CADE 27/SETR		110	"
ABCO-CADE 27/SETR	179	141	Flat meandering stream.
SETR-ATFI		161	Large seep area begins, ATFI dominated by DRSY, ASLE, SETR.
CADE 27-ALRH		178	End of seep, begin CADE 27.
ABCO-CADE 27/SETR		201	
MID-EL-MISC-RPGRAM	180	231	Wet mdw. begins, GLEL dominant.
MID-EL-MISC-RPGRAM		241	
MID-EL-MISC-RPGRAM		271	
MID-EL-MISC-RPGRAM	181	306	N. side str. dom. by cave.
CAVE/MID-EL-MIS-RPGRAM		330	N. side cave, S. side MIDELMIS.
ABCO-CADE 27/SETR		352	
			Pond. (End Steps).
CADE 27/ALRH	187	-	Open U/S.
CADE 27/ALRH	189		Grades to ABCO-CADE. Alder decreases.

ABCO-CADE	189+60		Spring from south. Mortality ALRH 10%.
ABCO-CADE	189+100		OGO DF 7'+ dbh
ABCO-CADE	189+150		Down logs ALRH decaying. Str. underground.
ABCO-CADE	190		Burney Cr. confluence, Polo Str. 3'W and fringe wet. 6' each side.
MID-EL-MIS-RPGRAM	190+50		Wet mdw., dom. plants GLEL, MIMO, PLLE, SETR, EPGL, JUOX, BAOS.
MID-EL-MIS-RPGRAM	191+30		End mdw., old culvert begins.

Michael W. Skenfield

BASELINE SURVEYS

VEGETATION PLOT METHOD

Four plots one meter square are located along the Polo Stream (see Vegetation Habitat Map - Polo). A steel stake is placed along the stream at points shown on map. Each of the four plots is placed based on measurement from the steel stake. The one-meter quadrat is placed straddling the stream with the left side running along a north-south line. Once the quadrat is placed, list plant species and relative percent cover on form.

First, list plants by species as a % cover for the total quadrat area. List water area as a % of total quadrat.

Second, adjust plant total cover to equal 100% and adjust each plant species accordingly (i.e.. Plant cover is 85% of quadrat, water area is 15%. Adjust each plant cover value by 100/85 = 1.18. Round to whole numbers in column for a total of 100%.

On the following Table E-3, Plot 1 shows a total of wetland plant cover as 76% of the total plant cover (see end of Table E-3 for Wetland Indicator Code). Plot 2 shows 64% wetland plant cover. Plot 3 equals 75% wetland plant cover and Plot 4 indicates 94% wetland plant cover.

The arithmetic average for wetland plant cover is 72% as the baseline value. If the average were to drop below 50% then it should be considered that the hydrologic regime has changed.

HERBACEOUS VEGETATION PLOT SUMMARY

See Plant Habitat Map - Polo

Plot #	Site Description	Species List for Plot	Relative % cover (adjusted)	Wetland Indicator Code*
1	West (upper) end of Polo Meadow near Stake 180. Greenline Sta. 238 steps. Site is 10' east of stake.	*Asarum lemmoni*	9	OBL
		Carex nebrascensis	15	OBL
		Epilobium glaberrimum	2	OBL
		Galium aparine	17	UPL
		Glyceria elata	9	OBL
	Water cover in plot = 15%	*Heracleum lanatum*	7	FACU
	Plant cover = 85%	*(maximum)*	2	FACW
		Juncus balticus	5	OBL
	Quadrat area = 100%	*Mimulus guttatus*	9	-
		(Moss)	25	OBL
		Senecio triangularis	**100**	
	Adjust values of plant cover in quadrat to total 100%. Factor =1.18	**TOTAL VEGETATION**		
2	50 ft. east of Plot 1.	*Asarum lemmoni*	14	OBL
		Glyceria elata	36	OBL
	Water cover in plot = 30%	*Ribes cereum*	36	UPL
	Plant cover = 70%	*Senecio triangularis*	14	OBL
	Factor = 1.43	**TOTAL VEGETATION**	**100**	

3	100 ft. east of beginning stake. Water cover in plot = 40% Plant cover = 60% Factor = 1.67	*Carex nebrascensis* *Epilobium glaberrimum* *Glyceria elata* *Heracleum lanatum* *Hypericum anagalloides* *Juncus balticus* *Mimulus guttatus* *Senecio triangularis* **TOTAL VEGETATION**	13 3 21 25 3 24 3 8 **100**	OBL OBL OBL FACU OBL FACW OBL OBL

Plot #	**Site Description**	**Species List for Plot**	**Relative % cover**	**Wetland Indicator Code**
4	15 ft. east of survey stake 181. Water cover in plot =10% Plant cover = 90% Factor = 1.11	*Asarum lemmoni* *Carex nebrascensis* *Carex vesicaria* *Epilobium glaberrimum* *Glyceria elata* *Heracleum lanatum* *Senecio triangularis* **TOTAL VEGETATION**	16 2 33 2 14 6 27 **100**	OBL OBL OBL OBL OBL FACU OBL

*** WETLAND INDICATOR CODE:**

OBL	=	Obligate Wetland Plant	(>99% in wetland)
FACW	=	Facultative Wetland Plant	(67% to 99% in wetland)
FACU	=	Facultative Upland Plant	(67% to 99% on non-wetland/upland)
UPL	=	Upland Plant	(99% on non-wetland)

BASELINE SURVEYS

WETLAND SAMPLE PLOT METHOD

The Wetland Sample Plot Method is similar to the Vegetation Plot Method. Both methods describe plant cover using the same dominance test. The wetland sample plot goes on to judge soil and hydrology parameters and can develop a more accurate analysis of borderline cases. In the short-run (5 year monitoring period) the wetland method may see no change in the soil parameter, but would distinguish a change in hydrology and plant cover.

Wetland samples taken were located in both wetland and non-wetland sites. It is important to make comparisons over time between the wetland and non-wetland plots. If a previously-wetland plot begins to dry out, the soils can exhibit characteristics of less-frequent hydric (wetland) conditions). In time, these conditions can be compared with nearby non-wetland plots. If a gradual change is detected, this change may be an indicator that the hydrologic regime of the spring basin is changing.

Included in this section is a set of Wetland Determination Data Forms for plots established in each spring basin. As shown on the Vegetation Habitat Maps, there are 8 plots on the Polo Spring/stream and 2 plots on the Marco Spring/stream.

Monitoring can be carried out by creating a new sample plot adjacent to or in the same place as the former plot. If succeeding samples show consistent changes, the results should be analyzed by a wetland scientist and the results reported.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Springwater Pipeline City/County: Tuolumne Sampling Date: 7·10·08

Applicant/Owner: G·Scott Fahey State: CA Sampling Point: SP1

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.)_____ Local relief (concave, convex, none)_____ Slope (%)_____

Subregion (LRR): _____ Lat: 38° 01·085′ Long: 120° 05·395′ Datum: N6V29

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES _____ NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology_____ significantly disturbed? Are "Normal Circumstances" present? YES____ NO___

Are Vegetation_____, Soil_____, or Hydrology _____naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No ____	Is the Sampled Area
Hydric Soil Present?	Yes X No ____	within a Wetland? Yes X No ____
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1. Calocedrus decurrens	50	Yes	UPL
2. Alnus rhombifolia	50	Yes	FACW
3.			
4.			
Total Cover _____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover_____			
Herb Stratum			
1. Asarum lemmoni	70	Yes	OBL
2. Leaf litter	30	–	–
3.			
4.			
5.			
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 66 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species_____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____(A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

_____ Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO _____

Remarks:

SOIL

Sampling Point SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
Assumed hydric due to plants and organic conditions.								

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

- _ Histosol (A1)
- _ Histic Epiedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Stratified Layers (A5) (Lrr C)
- _ 1 cm Muck (A9) (LRR D)
- _ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (SA)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1)
- _ Loamy Gleyed Matrix (F2)
- _ Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- _ 1 cm Muck (A9) (LRR C)
- _ 2 cm Muck (A10) (LRR B)
- _ Reduced Vertic (F18)
- _ Red Parent Material (TF2)
- _ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS: Saturated soil conditions

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- _ Surface Water
- X High Water Table (A2)
- X Saturation (A3)
- _ Water Marks (B1) (Non-riverine)
- _ Sediment Deposits (B2) (Non-riverine)
- _ Drift Deposits (B3) (Non-riverine)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial (B7)
- _ Salt Crust (B11)
- _ Biotic Crust (B12)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along living roots (C3)
- _ Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Plowed Soils (C6)
- _ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _ Water Marks (B1) (Riverine)
- _ Sediment deposits (B2) (Riverine)
- _ Drift Deposits (B3) (Riverine)
- _ Drainage Patterns (B10)
- _ dry-Season Water Table (C2)
- _ Thin Muck Surface (C7)
- _ Crayfish Burrows (C8)
- _ Saturation Visible on Aerial Imagery (C9)
- _ Shallow Aquitard (D3)
- _ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES X NO _____ Depth (inches): 12
Saturation Present? YES X NO _____ Depth (inches): 6

Wetland Hydrology Present? YES X NO _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Edge of Spring pool.

Michael McStay

Signature of Wetland Investigator

7.10.08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Springwater Pipeline City/County: Tuolumne Sampling Date: 7.10.08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SP2

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.)_____ Local relief (concave, convex, none) Concave Slope (%) 0

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES X NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology_____ significantly disturbed? Are "Normal Circumstances" present? YES X NO___

Are Vegetation_____, Soil_____, or Hydrology _____naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No _____	Is the Sampled Area
Hydric Soil Present?	Yes X No _____	within a Wetland? Yes X No _____
Wetland Hydrology Present?	Yes X No _____	

Remarks: Near pond orifice at edge of pool.

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1. Alnus rhombifolia	50	Yes	FACW
2. Calocedrus decurrens	50	Yes	UPL
3.			
4.			
Total Cover _____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover_____			
Herb Stratum			
1. Asarum lemmoni	50	Yes	OBL
2. Moss	20	No	-
3. Water	30	-	-
4.			
5.			
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 66 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species_____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____(A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

_____ Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO _____

Remarks:

SOIL

Sampling Point SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
	Assumed hydric							

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

- _ Histosol (A1)
- _ Histic Epiedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Stratified Layers (A5) (Lrr C)
- _ 1 cm Muck (A9) (LRR D)
- _ Depleted Below Dark Surface (A11)
- _ Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (SA)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- _ Loamy Mucky Mineral (F1)
- _ Loamy Gleyed Matrix (F2)
- _ Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (LRR C)
- __ 2 cm Muck (A10) (LRR B)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS: Assumed hydric, inundated in July

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- _ Surface Water
- _ High Water Table (A2)
- _ Saturation (A3)
- _ Water Marks (B1) (Non-riverine)
- _ Sediment Deposits (B2) (Non-riverine)
- _ Drift Deposits (B3) (Non-riverine)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial (B7)
- _ Salt Crust (B11)
- _ Biotic Crust (B12)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along living roots (C3)
- _ Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Plowed Soils (C6)
- _ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water Marks (B1) (Riverine)
- __ Sediment deposits (B2) (Riverine)
- __ Drift Deposits (B3) (Riverine)
- __ Drainage Patterns (B10)
- __ dry-Season Water Table (C2)
- __ Thin Muck Surface (C7)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES X NO _____ Depth (inches): 12
Saturation Present? YES X NO _____ Depth (inches): 6

Wetland Hydrology Present? YES X NO _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Edge of spring pool.

Michael W Stanfield

Signature of Wetland Investigator

7-10-08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Springwater Pipeline City/County: Tuolumne Sampling Date: 8-6-08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SP3

Investigator(s): Michael W. Skenfield Section, Township, Range: Sec 22, T2N, R17E

Landform (hillslope, terrace, etc.) Streambank Local relief (concave, convex, none) concave Slope (%) 0

Subregion (LRR): MLRA 22A Lat: 38° 01.085' Long: 120° 05.395' Datum: NGV29

Soil Map Unit Name: none NM Classification:

Are climatic/hydrologic conditions on the site typical for this time of year? YES X NO ____ (if no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? YES X NO ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No ____	Is the Sampled Area	
Hydric Soil Present?	Yes X No ____	within a Wetland?	Yes X No ____
Wetland Hydrology Present?	Yes X No ____		

Remarks: Bank of spring pool near stake 176. Borderline.

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1. Alnus rhombifolia	50	Yes	FACW
2. Calocedrus decurrens	50	Yes	UPL
3.			
4.			
Total Cover ____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover ____			
Herb Stratum			
1. Asarum lemmonii	60	Yes	OBL
2. Leaf litter	40	-	-
3.			
4.			
5.			
Total Cover ____			
Woody Vine Stratum			
1.			
2.			
Total Cover ____			

% Bare ground in herb Stratum ____

% Cover of Biotic Crust ____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 66 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

____ Prevalence Index is ≤3.0 [1]

____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO ____

Remarks: Borderline up on bank above pool edge.

SOIL

Sampling Point SP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
10	10YR 3/1		None		RM	M	Organic	Pool edge

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

- _ Histosol (A1)
- _ Histic Epiedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Stratified Layers (A5) (Lrr C)
- _ 1 cm Muck (A9) (LRR D)
- _ Depleted Below Dark Surface (A11)
- _ Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (SA)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- _ Loamy Mucky Mineral (F1)
- _ Loamy Gleyed Matrix (F2)
- _ Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- _ 1 cm Muck (A9) (LRR C)
- _ 2 cm Muck (A10) (LRR B)
- _ Reduced Vertic (F18)
- _ Red Parent Material (TF2)
- _ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: Roots and rock
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS: Soil dries and is drained 3' upslope of SP.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- _ Surface Water
- _ High Water Table (A2)
- _ Saturation (A3)
- _ Water Marks (B1) (Non-riverine)
- X Sediment Deposits (B2) (Non-riverine)
- _ Drift Deposits (B3) (Non-riverine)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial (B7)
- _ Salt Crust (B11)
- _ Biotic Crust (B12)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along living roots (C3)
- _ Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Plowed Soils (C6)
- _ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _ Water Marks (B1) (Riverine)
- _ Sediment deposits (B2) (Riverine)
- _ Drift Deposits (B3) (Riverine)
- _ Drainage Patterns (B10)
- _ dry-Season Water Table (C2)
- _ Thin Muck Surface (C7)
- _ Crayfish Burrows (C8)
- _ Saturation Visible on Aerial Imagery (C9)
- _ Shallow Aquitard (D3)
- _ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES X NO _____ Depth (inches): 24
Saturation Present? YES _____ NO X Depth (inches): _____

Wetland Hydrology Present? YES X NO _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: East edge of pooled area, Polo Spring. Stream width below pool average 3', silt and CB, shaded.

Michael W Stanfield

Signature of Wetland Investigator

8.6.08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Springwater Pipeline City/County: Tuolumne Sampling Date: 8-6-08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SP4

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.)_____ Local relief (concave, convex, none)_____ Slope (%)_____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES _____ NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology_____ significantly disturbed? Are "Normal Circumstances" present? YES____ NO___

Are Vegetation_____, Soil_____, or Hydrology _____naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes ____ No X	Is the Sampled Area	
Hydric Soil Present?	Yes X No ____	within a Wetland?	Yes ____ No X
Wetland Hydrology Present?	Yes ____ No X		

Remarks: Upper edge of wet meadow in montane chaparral. Borderline of wetland / upland.

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1.			
2.			
3.			
4.			
Total Cover _____			
Sapling Stratum			
1. Ceanothus cordulatus	80	Yes	UPL
2.			
3.			
4.			
Total Cover_____			
Herb Stratum			
1. Juncus balticus	60	Yes	FACW
2. Heracleum maximum*	40	Yes	FACU
3.			
4.			
5.			
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 33 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 = _____	
FACW species 60	x 2 = 120	
FAC species _____	x 3 = _____	
FACU species 40	x 4 = 160	
UPL species 80	x 5 = 400	
Column Totals 180 (A)	680 (B)	

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

No Dominance Test is >50%

No Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES____ NO X

Remarks: * formerly H. lanatum. Juncus is on upper edge of the wetland habitat grading into upland at the plot.

SOIL

Sampling Point SP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
10	10YR 3/1		None		RM	M	organic	Relict

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

_ Histosol (A1)
_ Histic Epiedon (A2)
_ Black Histic (A3)
_ Hydrogen Sulfide (A4)
_ Stratified Layers (A5) (Lrr C)
_ 1 cm Muck (A9) (LRR D)
_ Depleted Below Dark Surface (A11)
_ Thick Dark Surface (A12)
_ Sandy Mucky Mineral (S1)
_ Sandy Gleyed Matrix (SA)
_ Sandy Redox (S5)
_ Stripped Matrix (S6)
_ Loamy Mucky Mineral (F1)
_ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
_ Redox Dark Surface (F6)
_ Depleted Dark Surface (F7)
_ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

_ 1 cm Muck (A9) (LRR C)
_ 2 cm Muck (A10) (LRR B)
_ Reduced Vertic (F18)
_ Red Parent Material (TF2)
X Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS: Upper edge of relict wetland soil of stream valley. Stream has cut downward 2' therefore soil saturation / inundation also dropped and left hydric soil behind.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

_ Surface Water
_ High Water Table (A2)
_ Saturation (A3)
_ Water Marks (B1) (Non-riverine)
_ Sediment Deposits (B2) (Non-riverine)
_ Drift Deposits (B3) (Non-riverine)
_ Surface Soil Cracks (B6)
_ Inundation Visible on Aerial (B7)
_ Salt Crust (B11)
_ Biotic Crust (B12)
_ Aquatic Invertebrates (B13)
_ Hydrogen Sulfide Odor (C1)
_ Oxidized Rhizospheres along living roots (C3)
_ Presence of Reduced Iron (C4)
_ Recent Iron Reduction in Plowed Soils (C6)
_ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

_ Water Marks (B1) (Riverine)
_ Sediment deposits (B2) (Riverine)
_ Drift Deposits (B3) (Riverine)
_ Drainage Patterns (B10)
_ dry-Season Water Table (C2)
_ Thin Muck Surface (C7)
_ Crayfish Burrows (C8)
_ Saturation Visible on Aerial Imagery (C9)
_ Shallow Aquitard (D3)
_ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES _____ NO X Depth (inches): _____
Saturation Present? YES _____ NO X Depth (inches): _____

Wetland Hydrology Present? YES _____ NO X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upper edge wet meadow, upslope from stream.

Michael W Stanford

Signature of Wetland Investigator

8-6-08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Spring Water Pipeline City/County: Tuolumne Sampling Date: 7·10·08 wet

Applicant/Owner: G·Scott Fahey State: CA Sampling Point: SP4A

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.) stream bank Local relief (concave, convex, none) concave Slope (%) 5

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES X NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? YES X NO ___

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No ____	Is the Sampled Area	
Hydric Soil Present?	Yes X No ____	within a Wetland?	Yes X No ____
Wetland Hydrology Present?	Yes X No ____		

Remarks: 3' N of stream channel

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1. Alnus rhombifolia	30	Yes	FACW
2.			
3.			
4.			
Total Cover _____			
Sapling Stratum			
1. Salix scouleriana	30	Yes	FAC
2.			
3.			
4.			
Total Cover _____			
Herb Stratum			
1. Carex nebrascensis	30	Yes	OBL
2. Glyceria elata	30	Yes	OBL
3. Senecio triangularis	20	Yes	OBL
4. Heracleum maximum	10	No	FACU
5. Mimulus guttatus	10	No	OBL
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 71 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

_____ Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO _____

Remarks: Meadow width 15' at Plot 4.
Dominant plants OBL, therefore assume hydric soil.

SOIL

Sampling Point SP4A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
	Assume hydric soil							

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

- _ Histosol (A1)
- _ Histic Epiedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Stratified Layers (A5) (Lrr C)
- _ 1 cm Muck (A9) (LRR D)
- _ Depleted Below Dark Surface (A11)
- _ Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (SA)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- _ Loamy Mucky Mineral (F1)
- _ Loamy Gleyed Matrix (F2)
- _ Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS:
Organic upper 2". Assume hydric soil due to prevalence of OBL plants.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- _ Surface Water
- _ High Water Table (A2)
- _ Saturation (A3)
- _ Water Marks (B1) (Non-riverine)
- _ Sediment Deposits (B2) (Non-riverine)
- _ Drift Deposits (B3) (Non-riverine)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial (B7)
- _ Salt Crust (B11)
- _ Biotic Crust (B12)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along living roots (C3)
- _ Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Plowed Soils (C6)
- _ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES X NO _____ Depth (inches): 6
Saturation Present? YES X NO _____ Depth (inches): 6

Wetland Hydrology Present? YES X NO _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated soil conditions in July.

Michael W Stamper

Signature of Wetland Investigator

7.10.08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Spring Water Pipeline City/County: Tuolumne Sampling Date: 7-10-08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SP5

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.)_____ Local relief (concave, convex, none)_____ Slope (%)_____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES _____ NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology_____ significantly disturbed? Are "Normal Circumstances" present? YES_____ NO___

Are Vegetation_____, Soil_____, or Hydrology _____naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No ____	Is the Sampled Area	
Hydric Soil Present?	Yes X No ____	within a Wetland?	Yes X No ____
Wetland Hydrology Present?	Yes X No ____		

Remarks: Sample point located where stream enters pond.

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1. Alnus rhombifolia	50	Yes	OBL
2.			
3.			
4.			
Total Cover _____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover_____			
Herb Stratum			
1. Carex senta	50	Yes	OBL
2. Juncus oxymeris	25	Yes	FACW
3. Torreyochloa pallida	15	No	OBL
4. Senecio triangularis	5	No	OBL
5. Juncus balticus	5	No	FACW
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 100 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species_____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____(A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

_____ Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO _____

Remarks:

SOIL

Sampling Point SP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
Assumed hydric by plants and hydrology								

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

- _ Histosol (A1)
- _ Histic Epiedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Stratified Layers (A5) (Lrr C)
- _ 1 cm Muck (A9) (LRR D)
- _ Depleted Below Dark Surface (A11)
- _ Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (SA)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- _ Loamy Mucky Mineral (F1)
- _ Loamy Gleyed Matrix (F2)
- _ Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- _ 1 cm Muck (A9) (LRR C)
- _ 2 cm Muck (A10) (LRR B)
- _ Reduced Vertic (F18)
- _ Red Parent Material (TF2)
- _ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS: Not tested. Assumed hydric.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- _ Surface Water
- _ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (Non-riverine)
- X Sediment Deposits (B2) (Non-riverine)
- _ Drift Deposits (B3) (Non-riverine)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial (B7)
- _ Salt Crust (B11)
- _ Biotic Crust (B12)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along living roots (C3)
- _ Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Plowed Soils (C6)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _ Water Marks (B1) (Riverine)
- _ Sediment deposits (B2) (Riverine)
- _ Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- _ dry-Season Water Table (C2)
- X Thin Muck Surface (C7)
- _ Crayfish Burrows (C8)
- _ Saturation Visible on Aerial Imagery (C9)
- _ Shallow Aquitard (D3)
- _ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES X NO _____ Depth (inches): 12
Saturation Present? YES X NO _____ Depth (inches): 6

Wetland Hydrology Present? YES X NO _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Wetted stream bank.

Signature of Wetland Investigator

7.10.08
Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Spring Water Pipeline City/County: Tuolumne Sampling Date: 7·10·08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SPG

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.)_____ Local relief (concave, convex, none)_____ Slope (%)_____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES _____ NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology_____ significantly disturbed? Are "Normal Circumstances" present? YES_____ NO___

Are Vegetation_____, Soil_____, or Hydrology _____naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No ____	Is the Sampled Area	
Hydric Soil Present?	Yes X No ____	within a Wetland?	Yes X No ____
Wetland Hydrology Present?	Yes X No ____		

Remarks: Streambank of spillway for Polo pond.

VEGETATION

Tree Stratum (Scientific Names)	Relative % Cover	Dominant Species?	Indicator Status
1. Alnus rhombifolia	50	Yes	FACW
2. Calocedrus decurrens	50	Yes	UPL
3.			
4.			
Total Cover _____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover_____			
Herb Stratum			
1. Carex jonesii	30	Yes	FACW
2. Trifolium repens	20	Yes	FAC
3. Juncus effusus	20	Yes	FACW+
4. Epilobium glaberrinum	20	Yes	OBL
5. Mimulus moschatus	10	No	OBL
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 83 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species_____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____(A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

_____ Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO _____

Remarks: Prevalence of OBL | FACW.

SOIL

Sampling Point SP6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
Assume hydric soil								

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

- _ Histosol (A1)
- _ Histic Epiedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Stratified Layers (A5) (Lrr C)
- _ 1 cm Muck (A9) (LRR D)
- _ Depleted Below Dark Surface (A11)
- _ Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (SA)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- _ Loamy Mucky Mineral (F1)
- _ Loamy Gleyed Matrix (F2)
- _ Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- _ Surface Water
- _ High Water Table (A2)
- _ Saturation (A3)
- _ Water Marks (B1) (Non-riverine)
- _ Sediment Deposits (B2) (Non-riverine)
- _ Drift Deposits (B3) (Non-riverine)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial (B7)
- _ Salt Crust (B11)
- _ Biotic Crust (B12)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along living roots (C3)
- _ Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Plowed Soils (C6)
- _ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES ____ NO X Depth (inches): ____
Water Table Present? YES X NO 12 Depth (inches): ____
Saturation Present? YES X NO 6 Depth (inches): ____

Wetland Hydrology Present? YES X NO ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Located along stream bank.

Signature of Wetland Investigator

7.10.08
Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Spring Water Pipeline City/County: Tuolumne Sampling Date: 7.10.08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SP7 (Stake 182)

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.)_____ Local relief (concave, convex, none)_____ Slope (%)_____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES X NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology_____ significantly disturbed? Are "Normal Circumstances" present? YES X NO___

Are Vegetation_____, Soil_____, or Hydrology _____naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No ____	Is the Sampled Area
Hydric Soil Present?	Yes ____ No X	within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1.			
2.			
3.			
4.			
Total Cover _____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover_____			
Herb Stratum			
1. Carex jonesii	40	Yes	FACW
2. Juncus effusus	10	No	FACW+
3. Epilobium glaberinum	20	Yes	OBL
4. Minulus moschatus	20	Yes	OBL
5. Trifolium repens	10	No	FAC
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 100 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species_____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____(A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

_____ Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO _____

Remarks:

SOIL

Sampling Point SP7 Plot 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
10	10YR 4/4		None				Clay loam	

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

_ Histosol (A1)
_ Histic Epiedon (A2)
_ Black Histic (A3)
_ Hydrogen Sulfide (A4)
_ Stratified Layers (A5) (Lrr C)
_ 1 cm Muck (A9) (LRR D)
_ Depleted Below Dark Surface (A11)
_ Thick Dark Surface (A12)
_ Sandy Mucky Mineral (S1)
_ Sandy Gleyed Matrix (SA)
_ Sandy Redox (S5)
_ Stripped Matrix (S6)
_ Loamy Mucky Mineral (F1)
_ Loamy Gleyed Matrix (F2)
_ Depleted Matrix (F3)
_ Redox Dark Surface (F6)
_ Depleted Dark Surface (F7)
_ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) (LRR C)
___ 2 cm Muck (A10) (LRR B)
___ Reduced Vertic (F18)
___ Red Parent Material (TF2)
___ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES _____ NO X

REMARKS:
Residual soil from building dam.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

_ Surface Water
_ High Water Table (A2)
_ Saturation (A3)
_ Water Marks (B1) (Non-riverine)
_ Sediment Deposits (B2) (Non-riverine)
_ Drift Deposits (B3) (Non-riverine)
_ Surface Soil Cracks (B6)
_ Inundation Visible on Aerial (B7)
_ Salt Crust (B11)
_ Biotic Crust (B12)
_ Aquatic Invertebrates (B13)
_ Hydrogen Sulfide Odor (C1)
_ Oxidized Rhizospheres along living roots (C3)
_ Presence of Reduced Iron (C4)
_ Recent Iron Reduction in Plowed Soils (C6)
_ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Marks (B1) (Riverine)
___ Sediment deposits (B2) (Riverine)
___ Drift Deposits (B3) (Riverine)
___ Drainage Patterns (B10)
___ dry-Season Water Table (C2)
___ Thin Muck Surface (C7)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO _____ Depth (inches): _____
Water Table Present? YES _____ NO _____ Depth (inches): _____
Saturation Present? YES _____ NO _____ Depth (inches): _____

Wetland Hydrology Present? YES _____ NO X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Edge of pond (3'N of stake 182).

Michael W. Sanders

Signature of Wetland Investigator

8.6.08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Spring Water Pipeline City/County: Tuolumne Sampling Date: 8.6.08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SP8 (Stake 190 + 50)

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.)_____ Local relief (concave, convex, none)_____ Slope (%)_____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES _____ NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology_____ significantly disturbed? Are "Normal Circumstances" present? YES_____ NO___

Are Vegetation_____, Soil_____, or Hydrology _____naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No ____	Is the Sampled Area
Hydric Soil Present?	Yes ____ No X	within a Wetland? Yes ____ No X
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1.			
2.			
3.			
4.			
Total Cover _____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover_____			
Herb Stratum			
1. Glyceria elata	60	Yes	OBL
2. Barbarea orthoceras	20	Yes	FACW
3. Mimulus moschatus	20	Yes	OBL
4.			
5.			
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 100 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species_____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____(A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%

_____ Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO _____

Remarks:

SOIL

Sampling Point SP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
10	10YR 3/2		None				Sandy loam	

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

_ Histosol (A1)
_ Histic Epiedon (A2)
_ Black Histic (A3)
_ Hydrogen Sulfide (A4)
_ Stratified Layers (A5) (Lrr C)
_ 1 cm Muck (A9) (LRR D)
_ Depleted Below Dark Surface (A11)
_ Thick Dark Surface (A12)
_ Sandy Mucky Mineral (S1)
_ Sandy Gleyed Matrix (SA)
_ Sandy Redox (S5)
_ Stripped Matrix (S6)
_ Loamy Mucky Mineral (F1)
_ Loamy Gleyed Matrix (F2)
_ Depleted Matrix (F3)
_ Redox Dark Surface (F6)
_ Depleted Dark Surface (F7)
_ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

__ 1 cm Muck (A9) (LRR C)
__ 2 cm Muck (A10) (LRR B)
__ Reduced Vertic (F18)
__ Red Parent Material (TF2)
__ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES _____ NO X

REMARKS:
A drained alluvial soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

_ Surface Water
_ High Water Table (A2)
_ Saturation (A3)
_ Water Marks (B1) (Non-riverine)
_ Sediment Deposits (B2) (Non-riverine)
_ Drift Deposits (B3) (Non-riverine)
_ Surface Soil Cracks (B6)
_ Inundation Visible on Aerial (B7)
_ Salt Crust (B11)
_ Biotic Crust (B12)
_ Aquatic Invertebrates (B13)
_ Hydrogen Sulfide Odor (C1)
_ Oxidized Rhizospheres along living roots (C3)
_ Presence of Reduced Iron (C4)
_ Recent Iron Reduction in Plowed Soils (C6)
_ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

__ Water Marks (B1) (Riverine)
__ Sediment deposits (B2) (Riverine)
__ Drift Deposits (B3) (Riverine)
__ Drainage Patterns (B10)
__ dry-Season Water Table (C2)
__ Thin Muck Surface (C7)
__ Crayfish Burrows (C8)
__ Saturation Visible on Aerial Imagery (C9)
__ Shallow Aquitard (D3)
__ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES _____ NO X Depth (inches): _____
Saturation Present? YES _____ NO X Depth (inches): _____

Wetland Hydrology Present? YES _____ NO X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Beside stream, soil drained. Floodplain.

Michael W Sanger

Signature of Wetland Investigator

8.6.08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Spring Water Pipeline City/County: Twolumne Sampling Date: 7-10-08
Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SPM-1
Investigator(s): Michael W. Skenfield Section, Township, Range:
Landform (hillslope, terrace, etc.) terrace Local relief (concave, convex, none) flat Slope (%) 0
Subregion (LRR): MLRA 22A Lat: 38° 01·279 Long: 120° 05·477 Datum: NGV29
Soil Map Unit Name: NM Classification:
Are climatic/hydrologic conditions on the site typical for this time of year? YES X NO (if no, explain in Remarks)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? YES X NO
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:
Flat floodplain and meadow area in vicinity of Marco Spring.

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1.			
2.			
3.			
4.			
Total Cover			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover			
Herb Stratum			
1. Carex jonesii	50	Yes	FACW
2. Stellarita crispa	30	Yes	FACW
3. Moss	20	No	
4.			
5.			
Total Cover			
Woody Vine Stratum			
1.			
2.			
Total Cover			

% Bare ground in herb Stratum ____
% Cover of Biotic Crust ____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 100 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

Yes Dominance Test is >50%
____ Prevalence Index is ≤3.0 [1]
____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)
____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES X NO

Remarks:

SOIL

Sampling Point SPM-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
12	10YR 3/2		5YR 5/8		RM	M	clay loam	Meadow

[1] Type: C= Concentration; D= Depletion; RM = Reduced Matrix [2] Location: PL = Pore Lining; RC = Root Channel; M = Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

- _ Histosol (A1)
- _ Histic Epiedon (A2)
- _ Black Histic (A3)
- _ Hydrogen Sulfide (A4)
- _ Stratified Layers (A5) (Lrr C)
- _ 1 cm Muck (A9) (LRR D)
- _ Depleted Below Dark Surface (A11)
- _ Thick Dark Surface (A12)
- _ Sandy Mucky Mineral (S1)
- _ Sandy Gleyed Matrix (SA)
- _ Sandy Redox (S5)
- _ Stripped Matrix (S6)
- _ Loamy Mucky Mineral (F1)
- _ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- _ Redox Dark Surface (F6)
- _ Depleted Dark Surface (F7)
- _ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- _ 1 cm Muck (A9) (LRR C)
- _ 2 cm Muck (A10) (LRR B)
- _ Reduced Vertic (F18)
- _ Red Parent Material (TF2)
- _ Other (explain in Remarks)

[3] indicators of hydrophytic vegetation and wetland hydrology must be present

Restrictive Layer (if present):
Type: _____
Depth (inches) _____

Hydric Soil Present: YES X NO _____

REMARKS: Chroma plus mottle = hydric (borderline)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- _ Surface Water
- _ High Water Table (A2)
- _ Saturation (A3)
- _ Water Marks (B1) (Non-riverine)
- _ Sediment Deposits (B2) (Non-riverine)
- _ Drift Deposits (B3) (Non-riverine)
- _ Surface Soil Cracks (B6)
- _ Inundation Visible on Aerial (B7)
- _ Salt Crust (B11)
- _ Biotic Crust (B12)
- _ Aquatic Invertebrates (B13)
- _ Hydrogen Sulfide Odor (C1)
- _ Oxidized Rhizospheres along living roots (C3)
- X Presence of Reduced Iron (C4)
- _ Recent Iron Reduction in Plowed Soils (C6)
- _ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- _ Water Marks (B1) (Riverine)
- X Sediment deposits (B2) (Riverine)
- _ Drift Deposits (B3) (Riverine)
- X Drainage Patterns (B10)
- _ dry-Season Water Table (C2)
- _ Thin Muck Surface (C7)
- _ Crayfish Burrows (C8)
- _ Saturation Visible on Aerial Imagery (C9)
- _ Shallow Aquitard (D3)
- _ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? YES _____ NO X Depth (inches): _____
Water Table Present? YES _____ NO X Depth (inches): _____
Saturation Present? YES X NO _____ Depth (inches): 12

Wetland Hydrology Present? YES X NO _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Adjacent to stream which can supply subsurface moisture.

Michael W. Stamp

Signature of Wetland Investigator

7.10.08

Date

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Sugar Pine Spring Water Pipeline City/County: Tuolumne Sampling Date: 7·10·08

Applicant/Owner: G. Scott Fahey State: CA Sampling Point: SPM-2

Investigator(s): Michael W. Skenfield Section, Township, Range: _____

Landform (hillslope, terrace, etc.) hillside Local relief (concave, convex, none) slope Slope (%) 5

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NM Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? YES X NO _____ (if no, explain in Remarks)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? YES X NO ___

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present	Yes ____ No X	Is the Sampled Area	
Hydric Soil Present?	Yes ____ No X	within a Wetland?	Yes ____ No X
Wetland Hydrology Present?	Yes ____ No X		

Remarks:

VEGETATION

	Relative % Cover	Dominant Species?	Indicator Status
Tree Stratum (Scientific Names)			
1. Alnus rhombifolia	60	Yes	FACW
2.			
3.			
4.			
Total Cover _____			
Sapling Stratum			
1.			
2.			
3.			
4.			
Total Cover _____			
Herb Stratum			
1. Athyrium filix-femina	60	Yes	FAC
2. Adenocaulon bicolor	20	Yes	UPL
3. Trientalis latifolia	20	Yes	UPL
4.			
5.			
Total Cover _____			
Woody Vine Stratum			
1.			
2.			
Total Cover _____			

% Bare ground in herb Stratum _____

% Cover of Biotic Crust _____

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW or FAC: 25 (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 = _____	
FACW species 60	x 2 = 120	
FAC species 60	x 3 = 180	
FACU species _____	x 4 = _____	
UPL species 40	x 5 = 200	
Column Totals 160 (A)	500	(B)

Prevalence Index = B/A = 3.1

Hydrophytic Vegetation Indicators:

No Dominance Test is >50%

No Prevalence Index is ≤3.0 [1]

_____ Morphological adaptations [1] (Provide supporting data in Remarks or on separate sheet)

_____ Problematic Hydrophytic Vegetation [1] (explain)

[1]indicators of hydric soil & wetland hydrology must be present

Hydrophytic Vegetation Present? YES _____ NO X

Remarks: Lady fern cover outside seep.

CITED REFERENCES AND CONSULTATION

CITED REFERENCES

Data Bases and Maps:

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Documented Consultation from Responsible Agencies

Dan Applebee, Biologist, California Dept. of Fish and Game (CDFG), February 23, 2007. Discussed the pipeline project and potential resource issues with him Explained that Tom Beck (local authority with whom Dan Applebee is familiar) and the Stanislaus National Forest wildlife biologists are working with me on sensitive species issues. Mr. Applebee said that formal consultation must be through Julie Means, CDFG, Fresno Office.

Margaret Willits, Area Botanist for Mi Wok - Summit Ranger Districts, Stanislaus National Forest. Ms. Willits will be reviewing the Biological Survey Report for the pipeline project and will be one of the NEPA participants for the Special Use Permit. She met with the Consultant on May 25, 2005. Ms. Willits provided Sensitive Plant Species lists for which the Consultant was to survey (see Table 1).

Lauren Dailey, Environmental Scientist, State Water Resources Control Board, Division of Water Rights. Ms. Dailey provided the SWRCB letter of April 4, 2008, accepting the Consultant's proposed survey plan. She provided an outline for the report.

Beth Martinez, Lands Officer, Stanislaus National Forest. Ms. Martinez provided comments on the foregoing Biological Survey Report by Area Botanist Margaret Willits, SNF. and Marci Baumbach, Wildlife Biologist, SNF. Email dated April 15, 2010.

PHOTO SECTION

Photo 1: Sierra Mixed Conifer habitat

Photo 2: Polo pipeline route along skid trail (0+00 - 17+00). Riparian community along stream is shown to right side.

Photo 3: Segment of abandoned RR Grade near Sta. 88+00.

Photo 4: Typical section of abandoned RR Grade which is being used as a road.

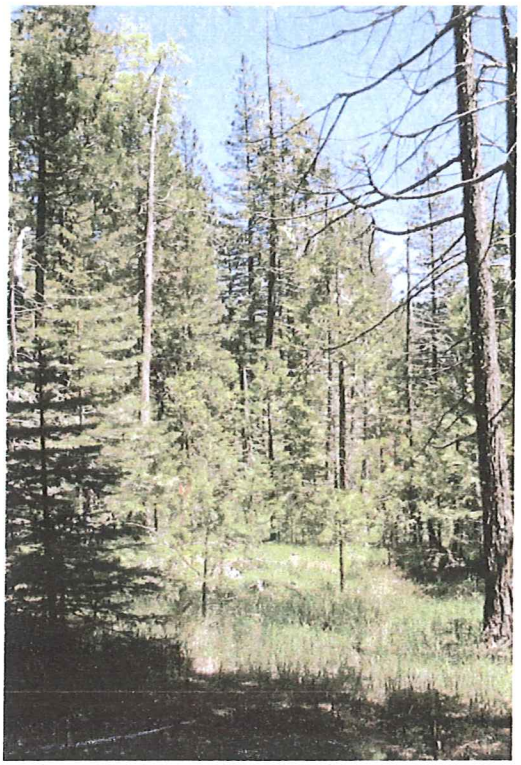


Photo 5: Typical habitat at end of pipeline route (RR Grade Sta. 235+00 to 236+00).

Photo 6: Alder stand in ALRH/ RHOC habitat.

Photo 7: The riparian gramineous vegetation is shown in center - SP 4 is along right side.

Photo 8: Potter in lady fern seep. At RHOC/ATFI habitat.

Photo 9: Potter at CAJO community - Marco Spring.

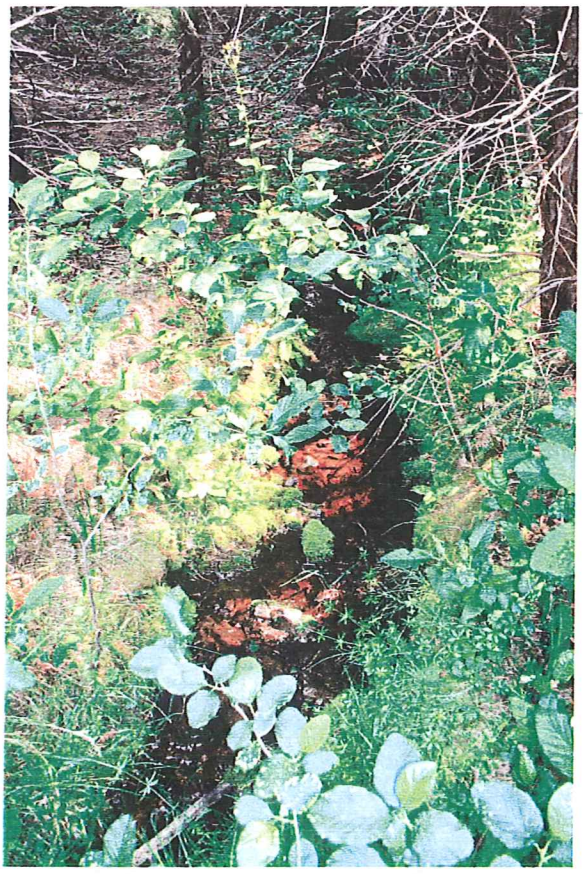


Photo 10: Marco Stream as it passes from CAJO habitat to CADE 27 habitat.

Photo 11: Small wetland meadow along Polo Stream.

Photo 12: Small pond along Polo Stream

Photo 13: Meadow area where Polo Stream backs up against the RR Grade.

POUCH A

MARCO STREAM

Marco Spring and Stream Site

Sugar Pine Spring Water Pipeline
October 2008

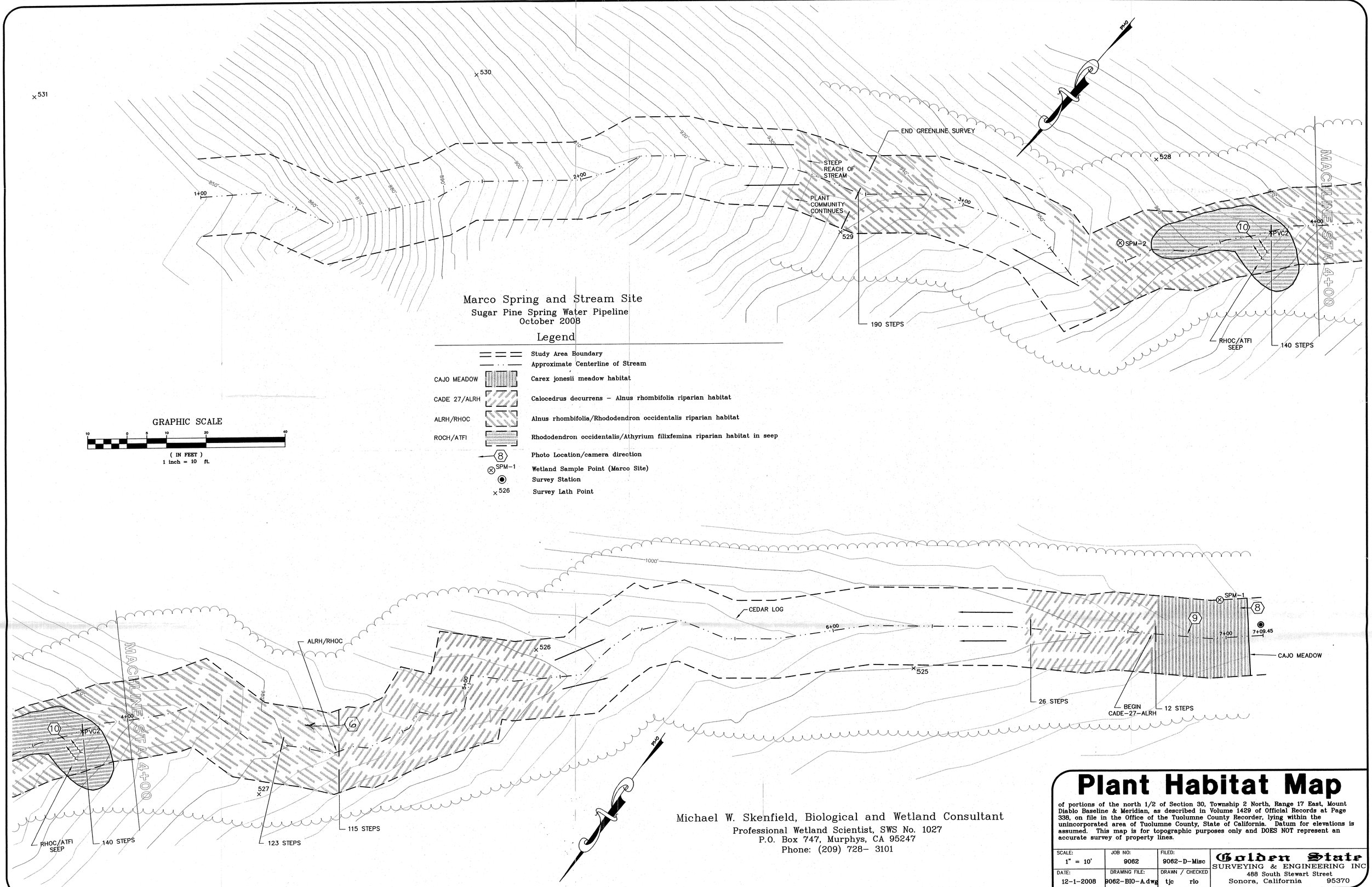
Legend

- Study Area Boundary
- Approximate Centerline of Stream
- CAJO MEADOW — Carex jonesii meadow habitat
- CADE 27/ALRH — Calocedrus decurrens – Alnus rhombifolia riparian habitat
- ALRH/RHOC — Alnus rhombifolia/Rhododendron occidentalis riparian habitat
- ROCH/ATFI — Rhododendron occidentalis/Athyrium filixfemina riparian habitat in seep
- 8 — Photo Location/camera direction
- SPM–1 — Wetland Sample Point (Marco Site)
- Survey Station
- 526 — Survey Lath Point

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.



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Plant Habitat Map

of portions of the north 1/2 of Section 30, Township 2 North, Range 17 East, Mount Diablo Baseline & Meridian, as described in Volume 1429 of Official Records at Page 338, on file in the Office of the Tuolumne County Recorder, lying within the unincorporated area of Tuolumne County, State of California. Datum for elevations is assumed. This map is for topographic purposes only and DOES NOT represent an accurate survey of property lines.

SCALE:	JOB NO:	FILED:	
1" = 10'	9062	9062-D-Misc	Golden State SURVEYING & ENGINEERING INC
DATE:	DRAWING FILE:	DRAWN / CHECKED	488 South Stewart Street
12-1-2008	9062-BIO-A.dwg	tjc rlo	Sonora, California 95370

POUCH B

POLO STREAM

Polo Site

Legend

- Study Area Boundary
- Approximate Centerline of Stream
- ABCO–CADE 27/SETR — Abies concolor – Calocedrus decurrens / Senecio triangularis riparian habitat
- CADE 27/ALRH — Calocedrus decurrens – Alnus rhombifolia riparian habitat
- MID–EL–MISC RPGRAM — Mid Elevation Miscellaneous Riparian Gramineous vegetation
- SETR/ATFI — Senecio triangularis / Athyrium filix–femina riparian habitat in seep
- CAVE — Wetland dominated by Carex vescaria
- PLOT 1 — Vegetation (quadrat) Plot
- 8 — Photo Location/camera direction
- SP–1 — Wetland Sample Point (~~Mazco~~ Polo Site)
- Survey Station
- ×526 — Survey Lath Point

PIPO

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

ABCO–CADE 27/SETR
BEGIN GREENLINE (STEEL ROD)
SP2
SP1
SPRING BASIN
21+15
21+00
SP3
176
SPRING BASIN ENDS
×175
17 STEPS
80–90% CANOPY COVER
32 STEPS
20+00
43 STEPS
×177
60 STEPS
WETLAND (MIMO DOMINANT)
80 STEPS
×178
19+00
ROAD
DIRT
CL
91 STEPS
95 STEPS
110 STEPS
101 STEPS
18+00
×179
SETR/AFTI
140 STEPS
CADE 27–ALRH
161 STEPS
ABCO–CADE 27/SETR
SACS
MATURE PIPO
178 STEPS
PLOT 1
SP4A
16+00
REPRODUCTION SURVEY ENDS
201 STEPS
PLOT 2
MID–EL–MISC–RPGRAM
MACHLINE STA 13+00
SEE SHEET 1
13+00
SP5
12
PLOT 4
14+00
352 STEPS
330 STEPS
CAVE
306 STEPS
×181
SP4
PLOT 3
15+00
11
CAVE
271 STEPS
241 STEPS
×180
QUADRAT PLOT STAKE

SHEET 1 OF 2

Plant Habitat Map

of portions of the north 1/2 of Section 30, Township 2 North, Range 17 East, Mount Diablo Baseline & Meridian, as described in Volume 1429 of Official Records at Page 338, on file in the Office of the Tuolumne County Recorder, lying within the unincorporated area of Tuolumne County, State of California. Datum for elevations is assumed. This map is for topographic purposes only and DOES NOT represent an accurate survey of property lines.

Michael W. Skenfield, Biological and Wetland Consultant
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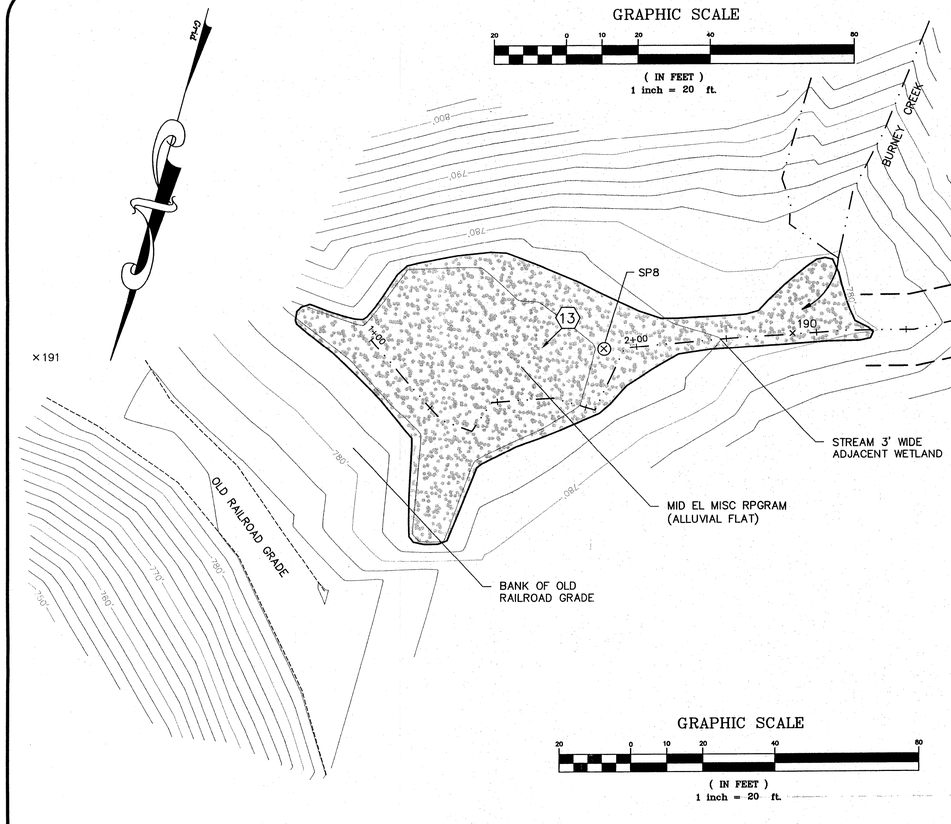
Phone: (209) 728– 3101

SCALE:	JOB NO:	FILED:	Golden State SURVEYING & ENGINEERING INC
1" = 20'	9062	9062–D–Misc	488 South Stewart Street
DATE:	DRAWING FILE:	DRAWN / CHECKED	Sonora, California 95370
12–2–2008	9062–BIO–B.dwg	tjc rlo	

Polo Site

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



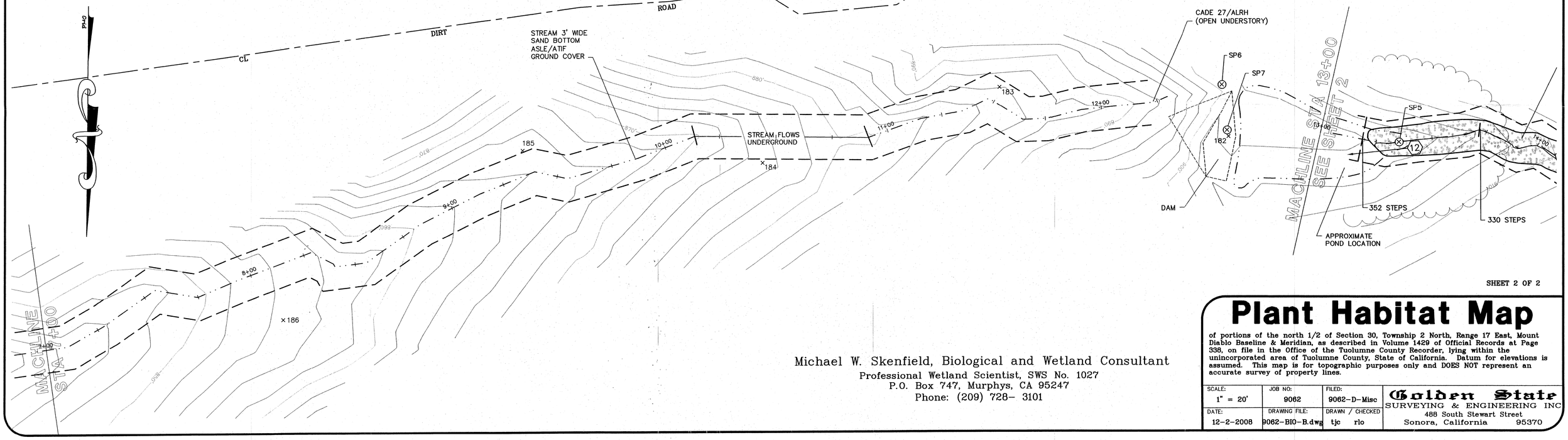
GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

Polo Spring and Stream Site

Sugar Pine Spring Water Pipeline
October 2008

Legend

	Study Area Boundary
	Approximate Centerline of Stream
ABCO–CADE 27/SETR	Abies concolor – Calocedrus decurrens / Senecio triangularis riparian habitat
CADE 27/ALRH	Calocedrus decurrens – Alnus rhombifolia riparian habitat
MID–EL–MISC RPGRAM	Mid Elevation Miscellaneous Riparian Gramineous vegetation
SETR/ATFI	Senecio triangularis / Athyrium filix–femina riparian habitat in seep
CAVE	Wetland dominated by Carex vescaria
PLOT 1	Vegetation (quadrant) Plot
8	Photo Location/camera direction
SP4	Wetland Sample Point (Marco Site)
	Survey Station
×526	Survey Lath Point



SHEET 2 OF 2

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Plant Habitat Map

of portions of the north 1/2 of Section 30, Township 2 North, Range 17 East, Mount Diablo Baseline & Meridian, as described in Volume 1429 of Official Records at Page 338, on file in the Office of the Tuolumne County Recorder, lying within the unincorporated area of Tuolumne County, State of California. Datum for elevations is assumed. This map is for topographic purposes only and DOES NOT represent an accurate survey of property lines.

SCALE:	JOB NO:	FILED:	
1" = 20'	9062	9062–D–Misc	Golden State SURVEYING & ENGINEERING INC
DATE:	DRAWING FILE:	DRAWN / CHECKED	488 South Stewart Street
12–2–2008	9062–B10–B.dwg	tjc rlo	Sonora, California 95370