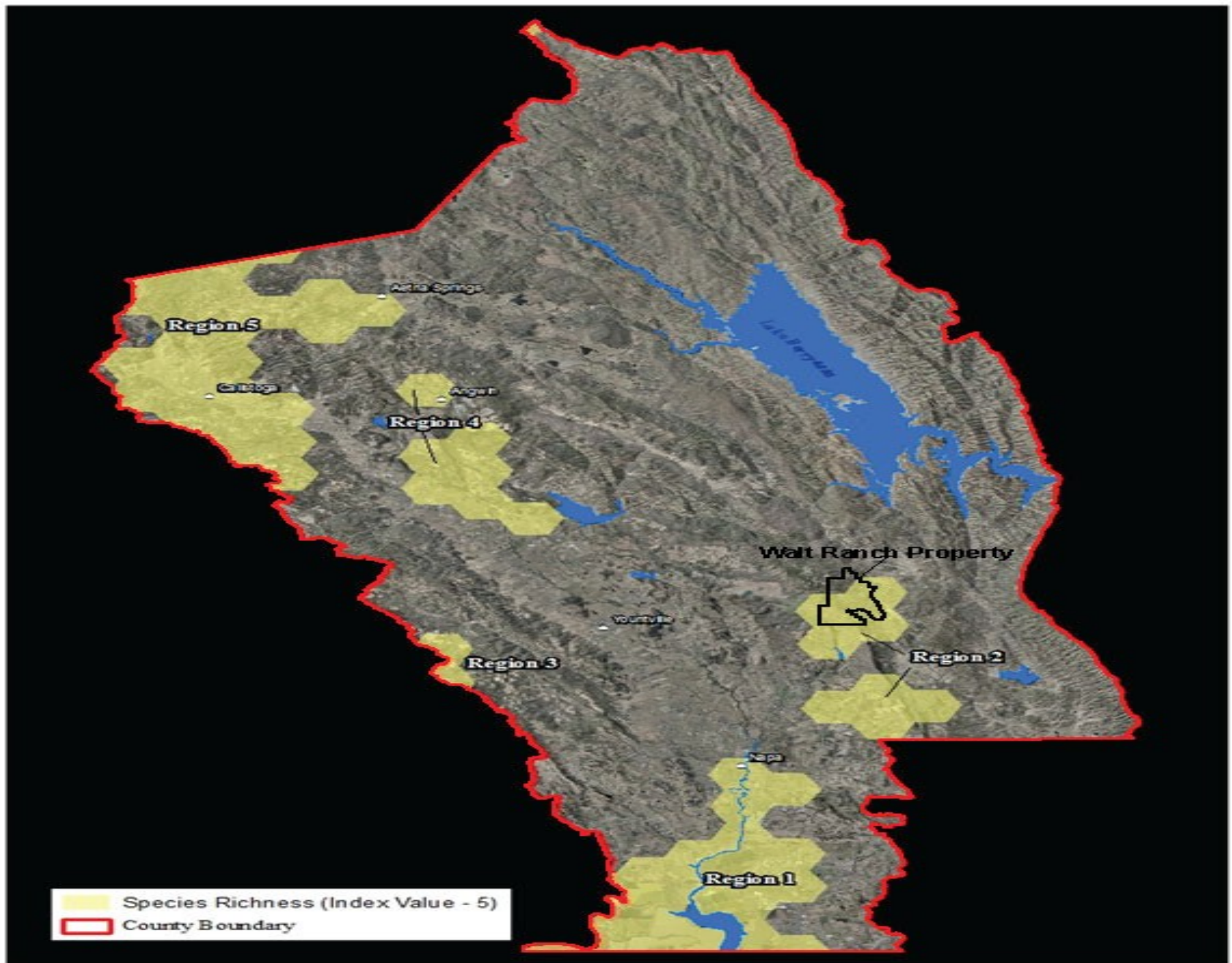
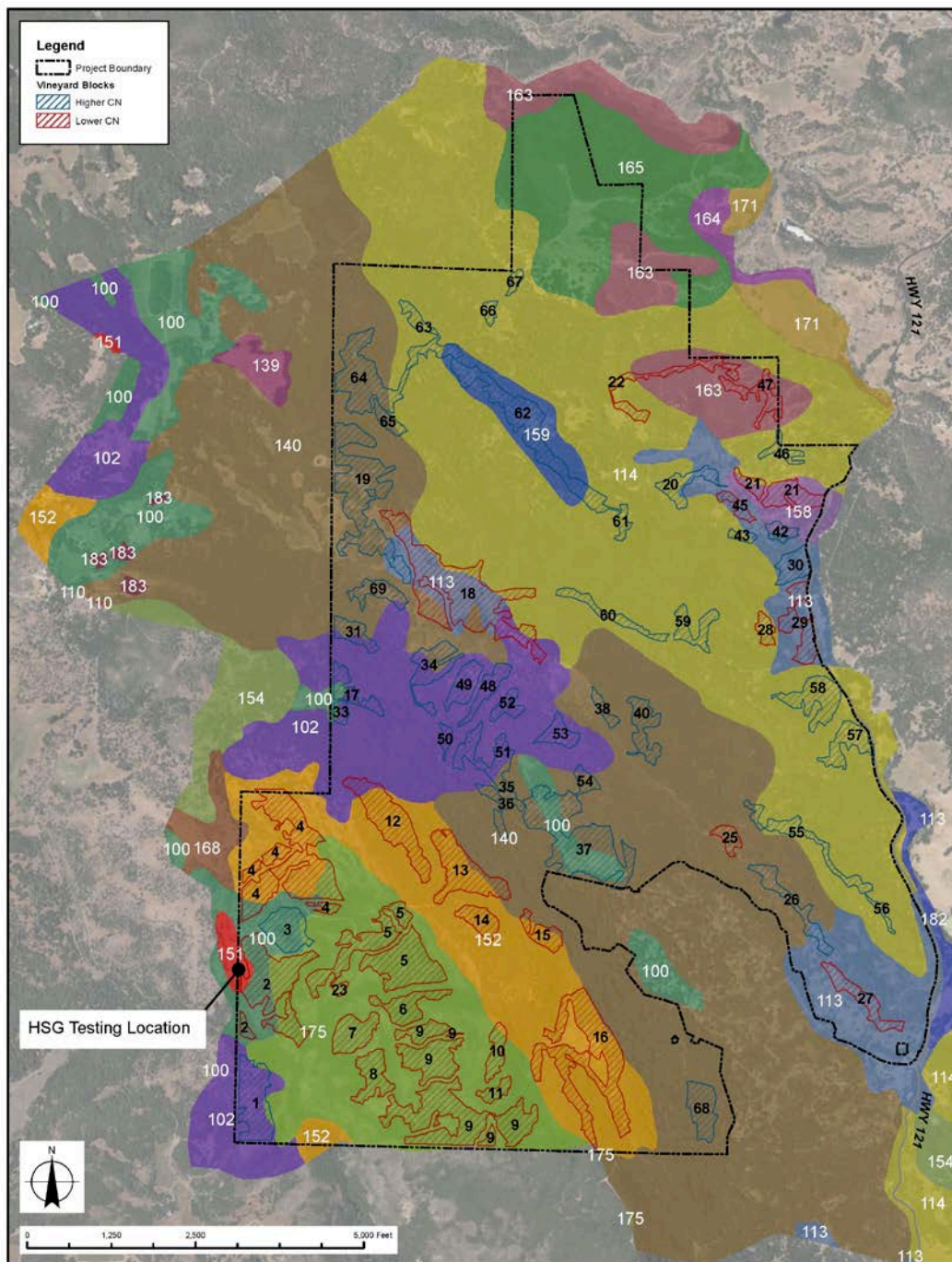


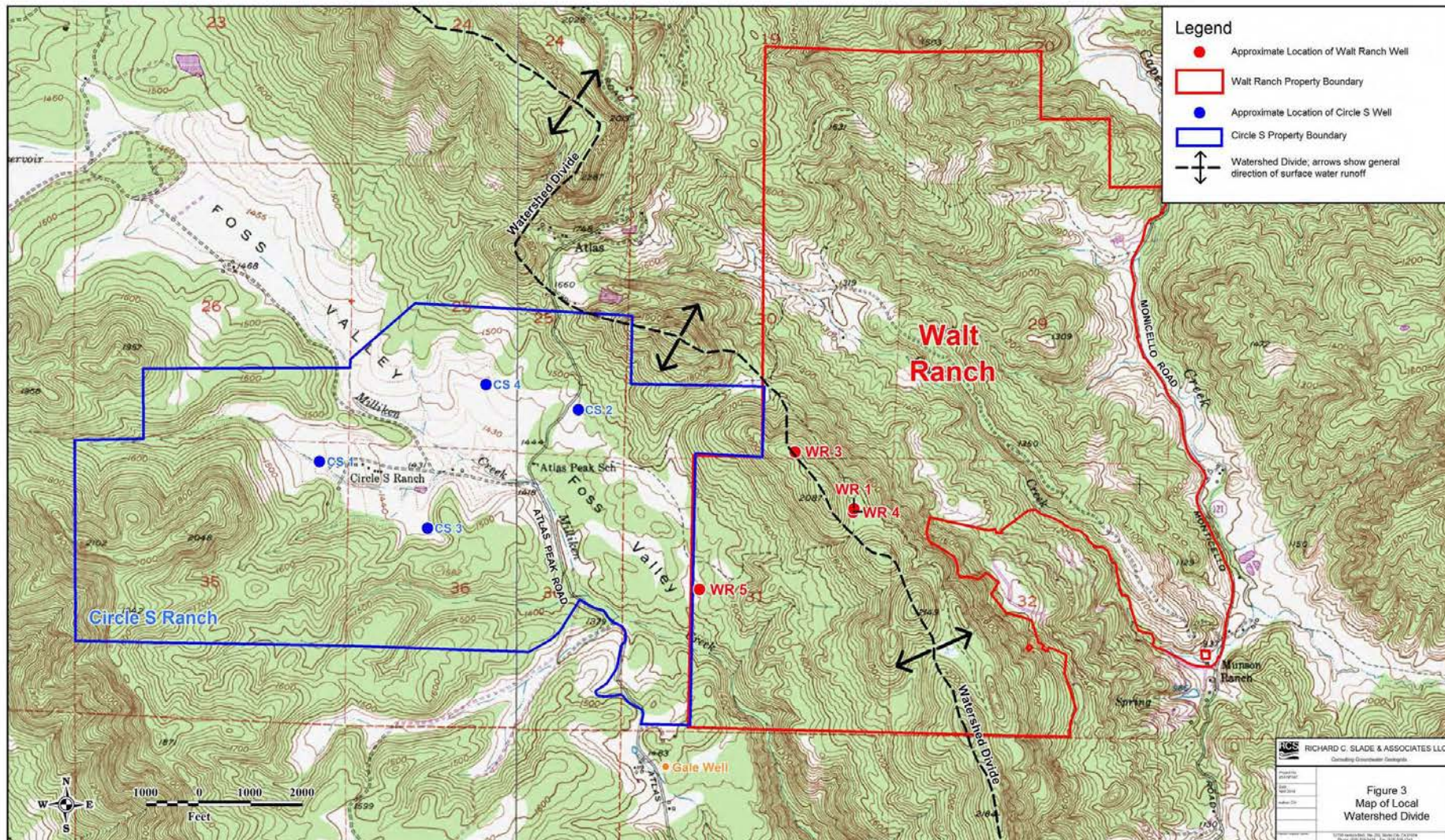


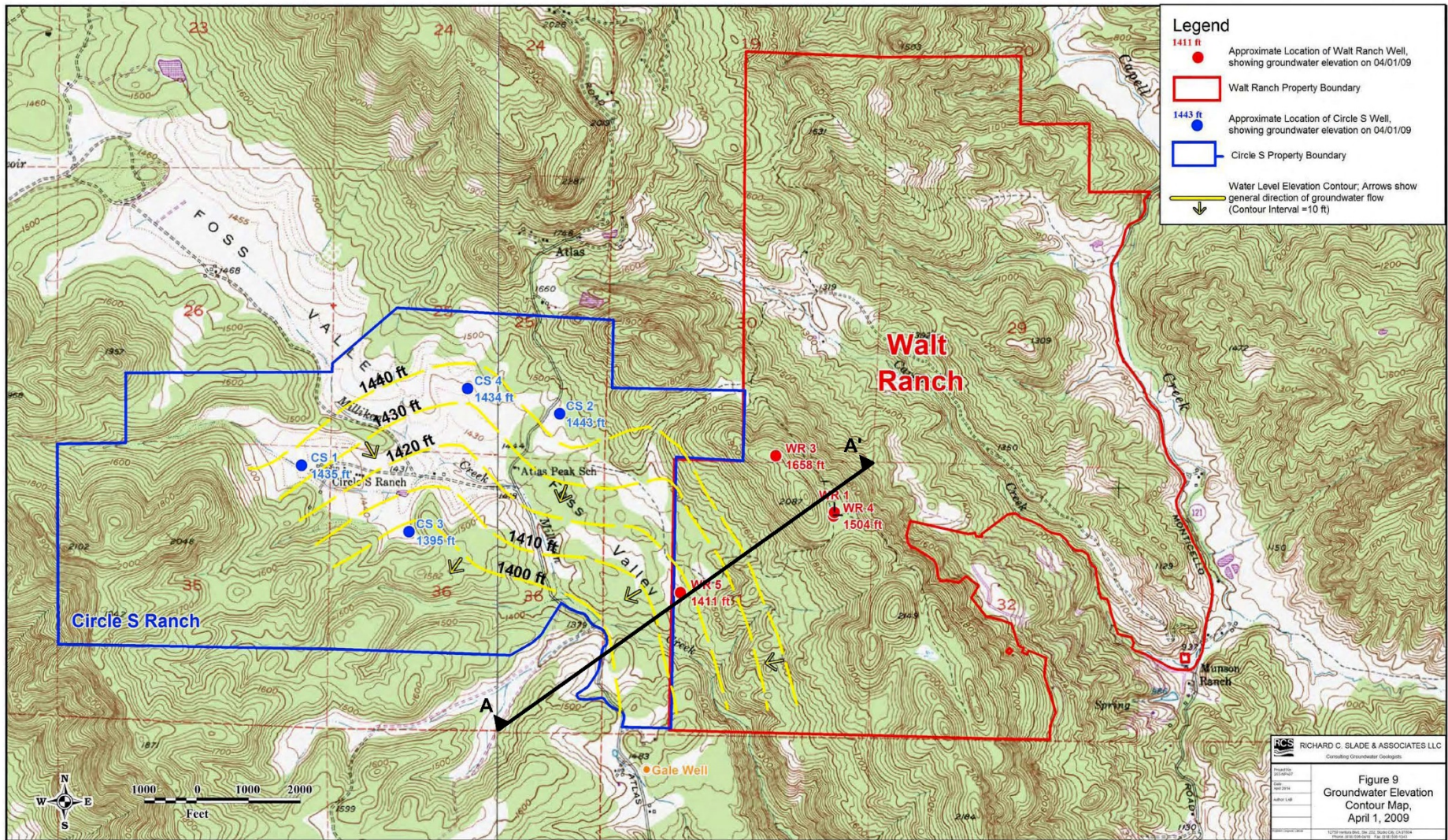
Source: Link, E.E. 2012. A modeling and geospatial approach to predicting effects on biodiversity due to vineyard expansion in Napa County. Master's Thesis. California State University, Sacramento. 96 pp.

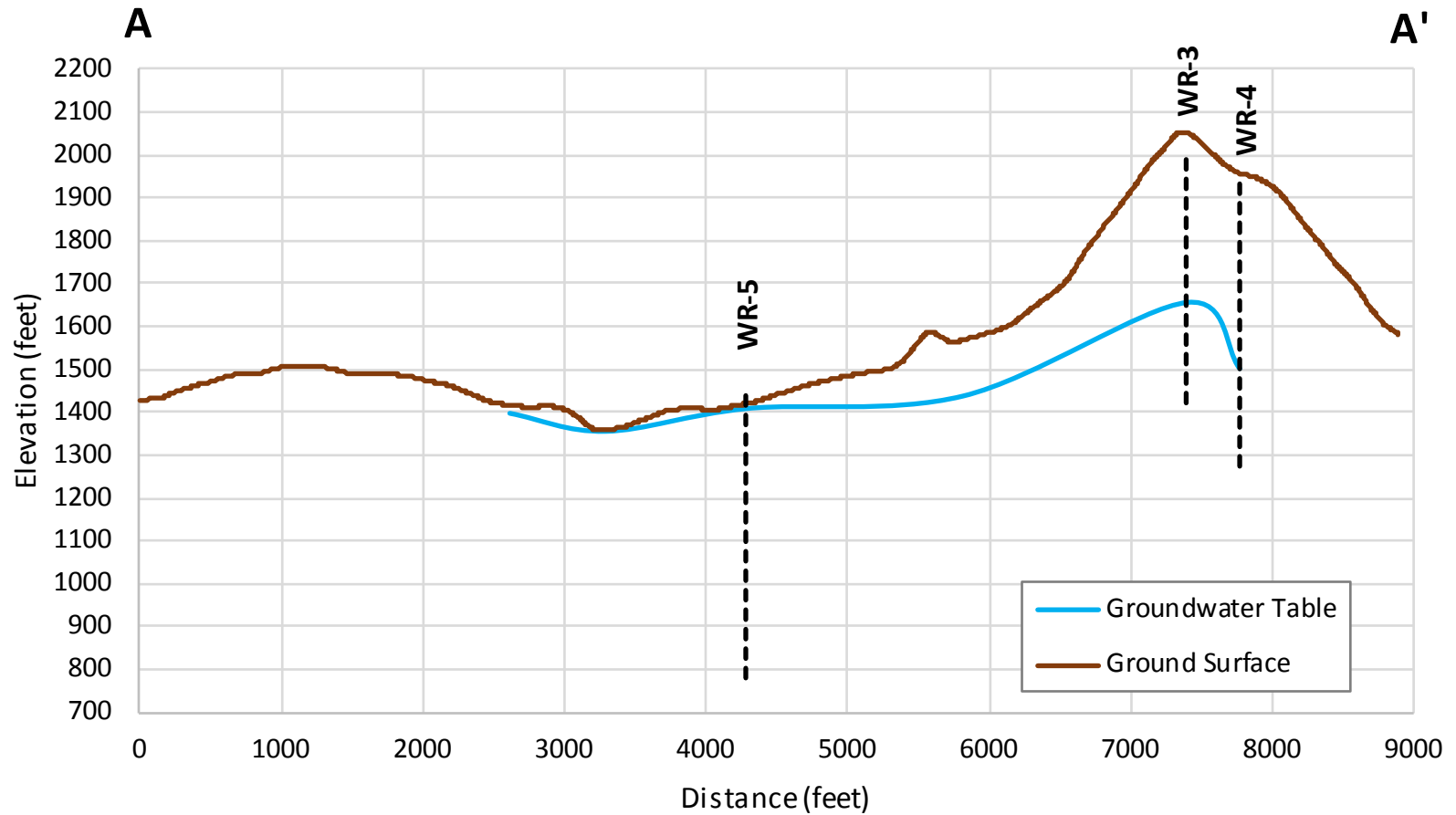
Figure 1: Overlay of Walt Ranch Project Site and Core Species-rich Regions of Napa County



- HSG testing: Small plot on Unit 151 Hambright-Rock outcrop complex, 2 to 30 percent slopes.
- Applied to other rock outcrop units without field verification: Unit 152 Hambright, 30 to 70 percent slopes and Unit 175 Rock outcrop.
- Applied to non-rock outcrop Units without field verification: 100/102 Aiken loam; 113 Bressa-Dibble complex; 140 Forward gravelly loam; 158 Los Gatos loam; and 163 Maymen-Millsholm-Lodo association.
- Considerable research/literature indicates tilling/ripping increases runoff and erosion.
- RWQCB Draft Vineyard WDR for Napa/Sonoma – ripping can't reduced peak runoff.

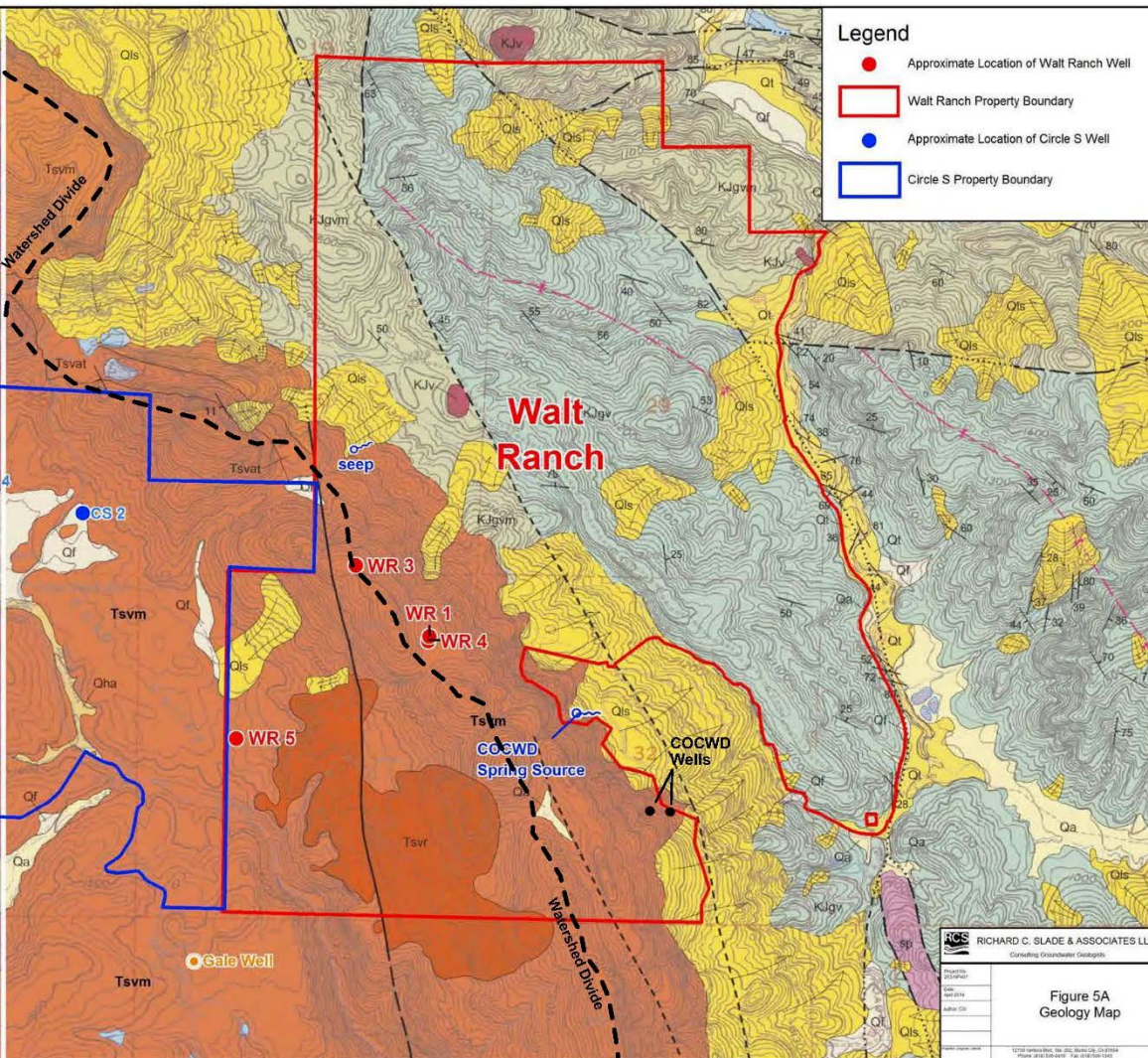






Project Aquifer Pump Test on WR-3

- 26.9-feet of drawdown
- No influence in surrounding wells
- Sonoma volcanic aquifer fractures are not continuous; aquifer is “compartmentalized”.



Proposed Walt R. Well Pumping

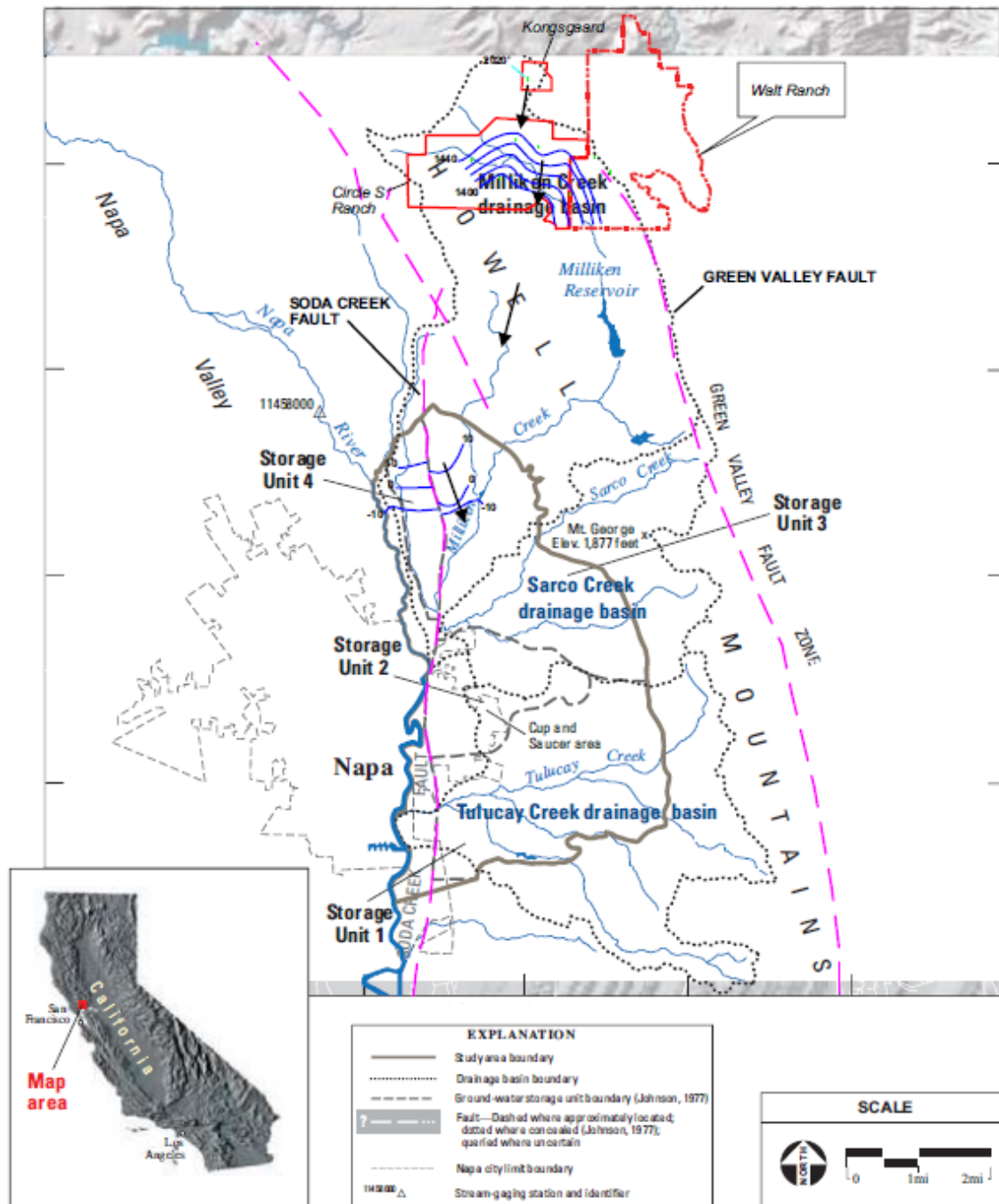
- 56% demand from WR-3
- 19% demand from WR-4
- 26% demand from WR-5

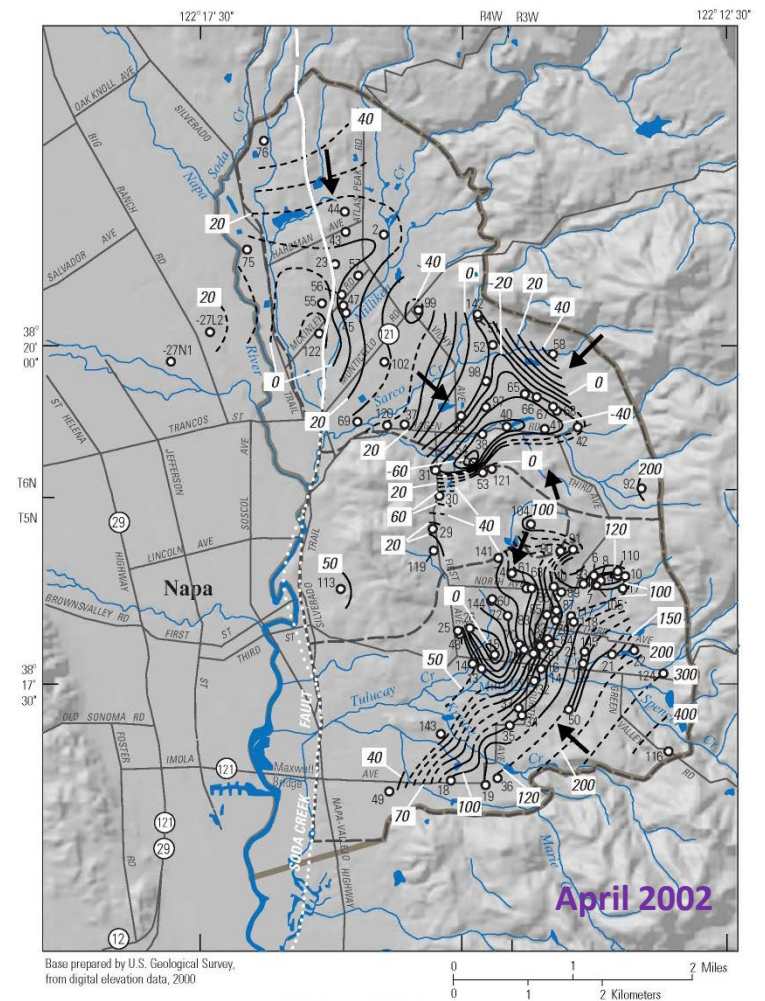
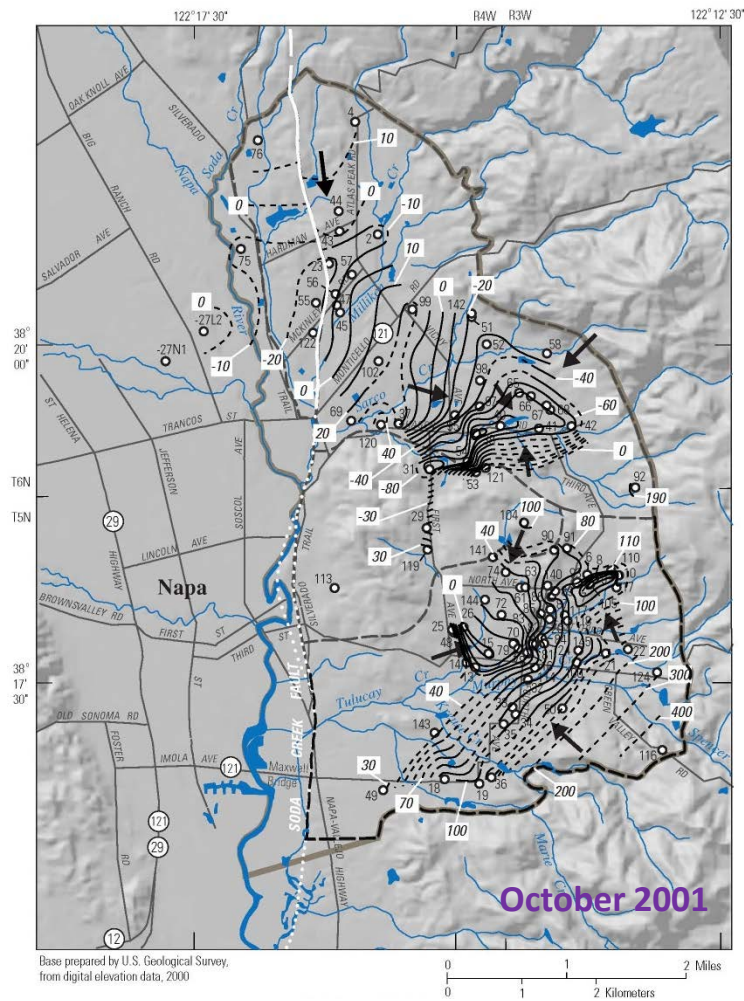
Groundwater Demands from Walt Ranch Recharge Area

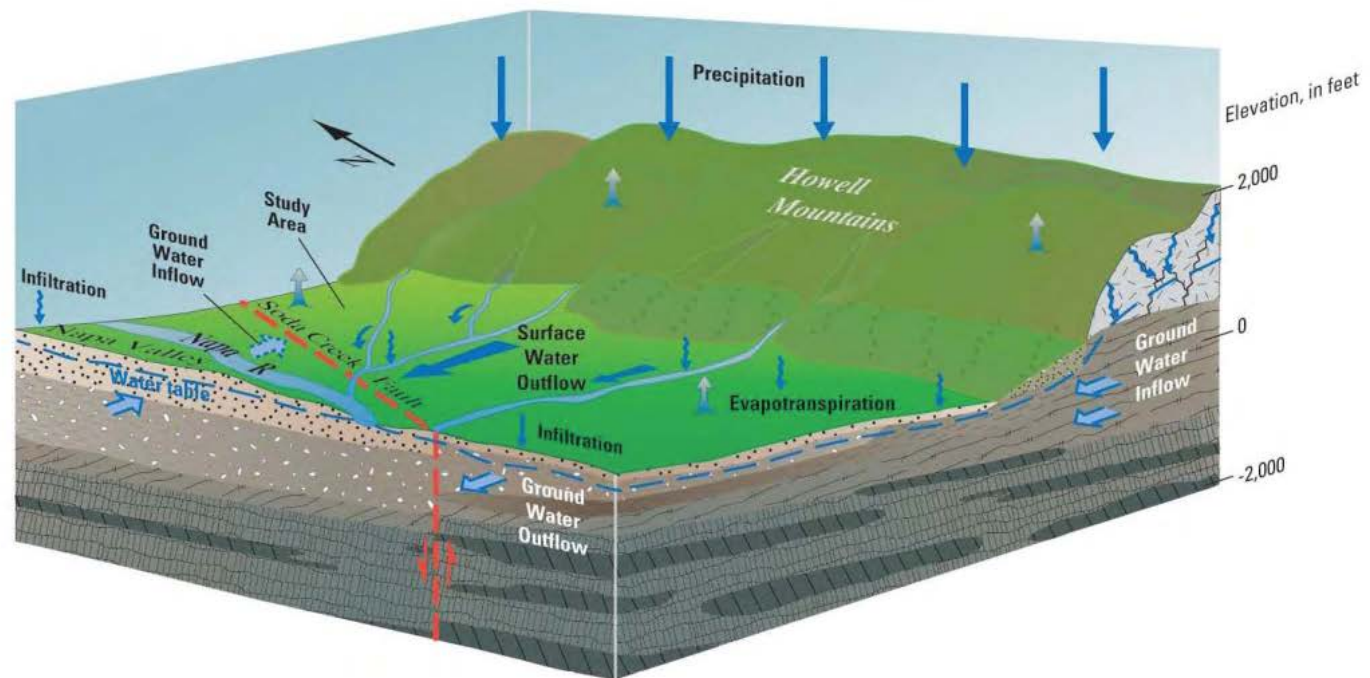
- Walt Ranch 126-145 AF/yr
- COCWD 57 AF/yr
- TOTAL 183-202 AF/yr

Walt Ranch Groundwater Recharge to Sonoma Volcanics

- Walt Ranch 161 AF/yr







EXPLANATION

(Arrows show components of hydrologic budget)

-  Infiltration
-  Evapotranspiration
-  Precipitation
-  Direction of ground-water movement

Figure 9. Conceptual model of the ground-water flow system in the lower Milliken–Sarco–Tulucay Creeks area, southeastern Napa County, California.



**Cumulative Effects of
Proposed Walt Ranch
Development on Milliken
Creek, Milliken Reservoir,
Resident Rainbow Trout,
Steelhead Trout, and
Chinook Salmon**

November 18, 2016

**Presentation to the Napa
County Board of Supervisors**



Patrick Higgins
Consulting Fisheries Biologist
791 Eighth Street, Suite A
Arcata, CA 95521

Since 1989

Walt Ranch Project Likely to Significantly Effect:

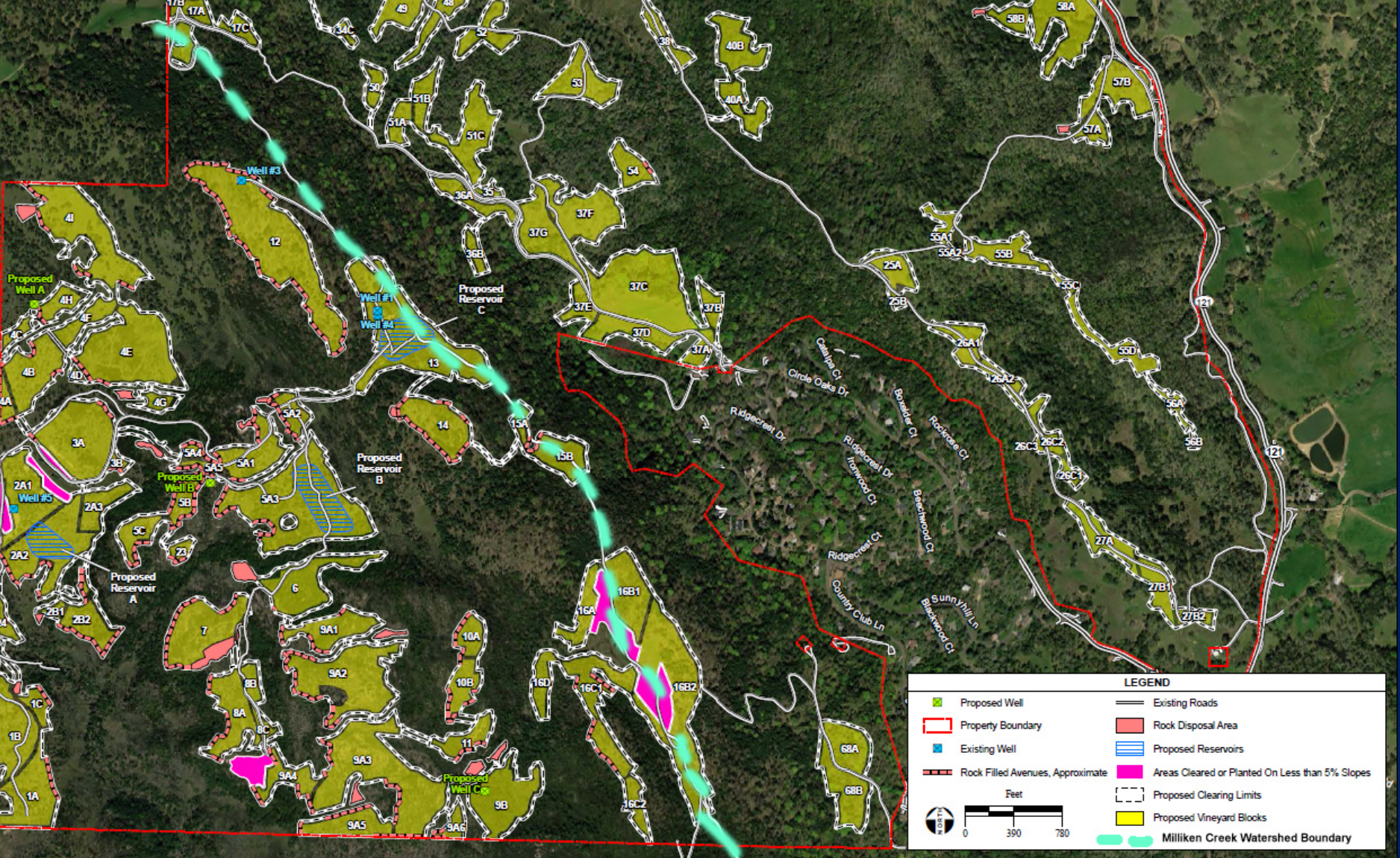
Native Rainbow Trout above Milliken Reservoir

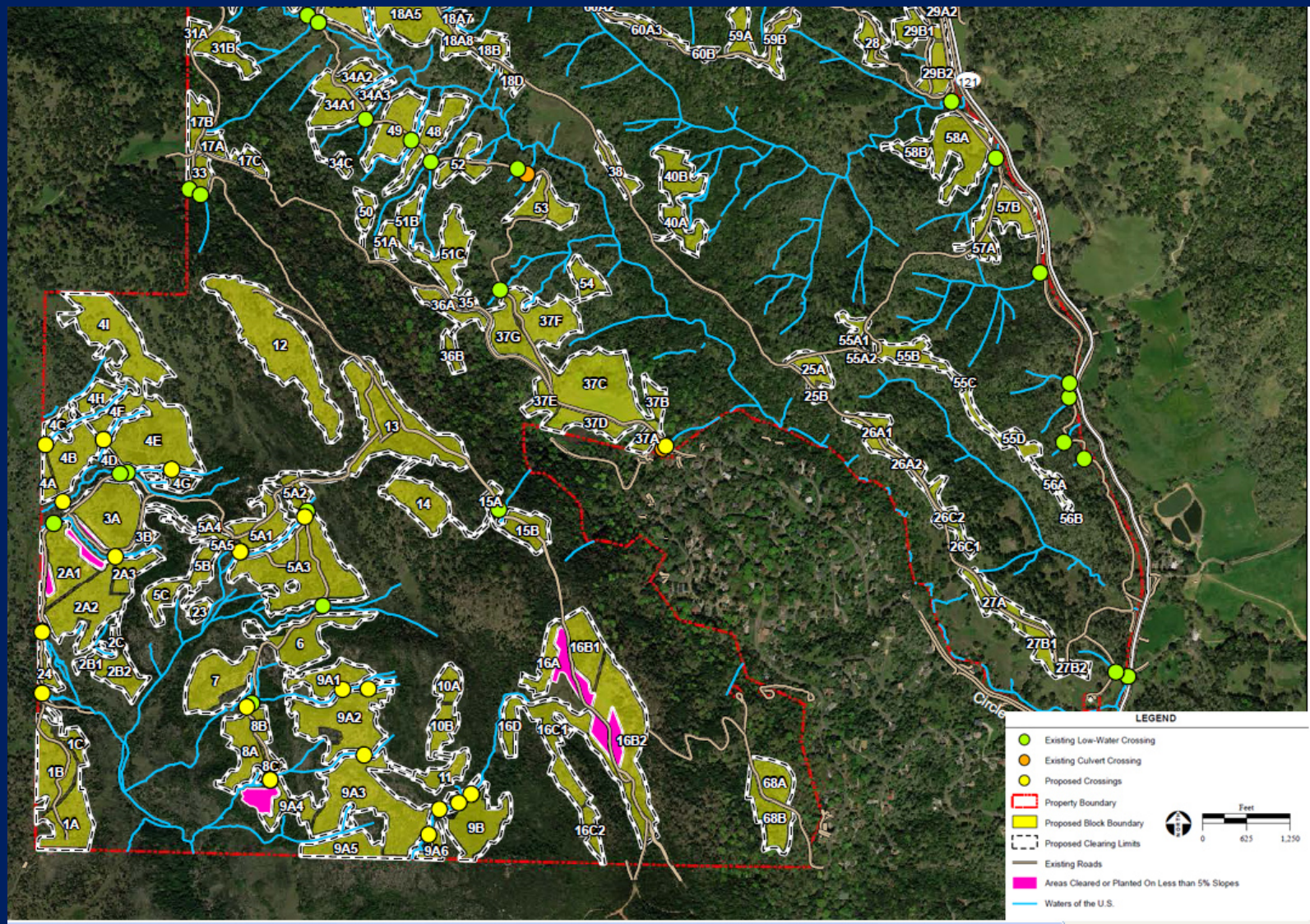
Cold Water Beneficial Uses of upper Milliken Creek below the Project

Steelhead Trout and Chinook salmon in lower Milliken Creek

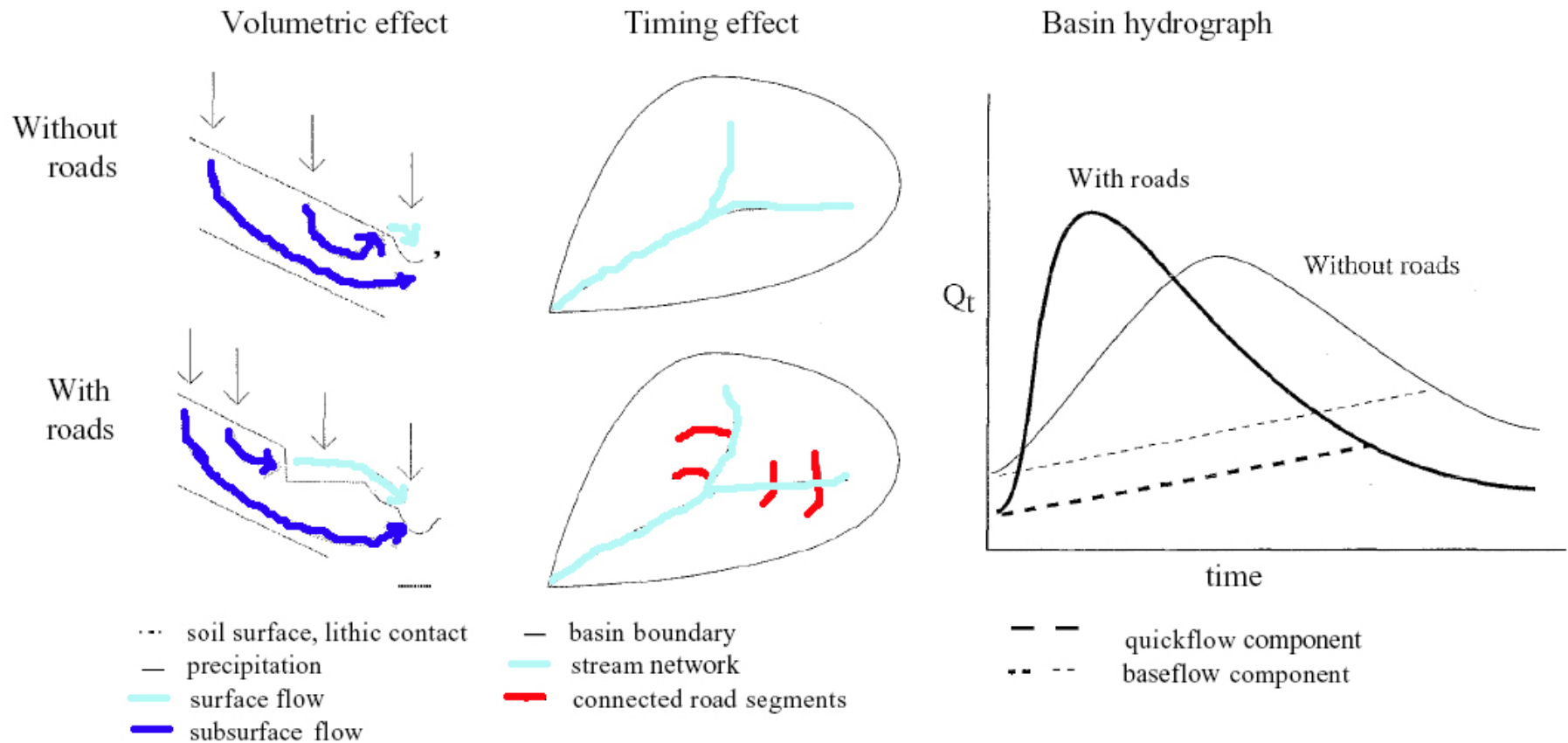
Drinking water availability for the community of Napa

Potential for toxic Cyanobacteria blooms in Milliken Reservoir





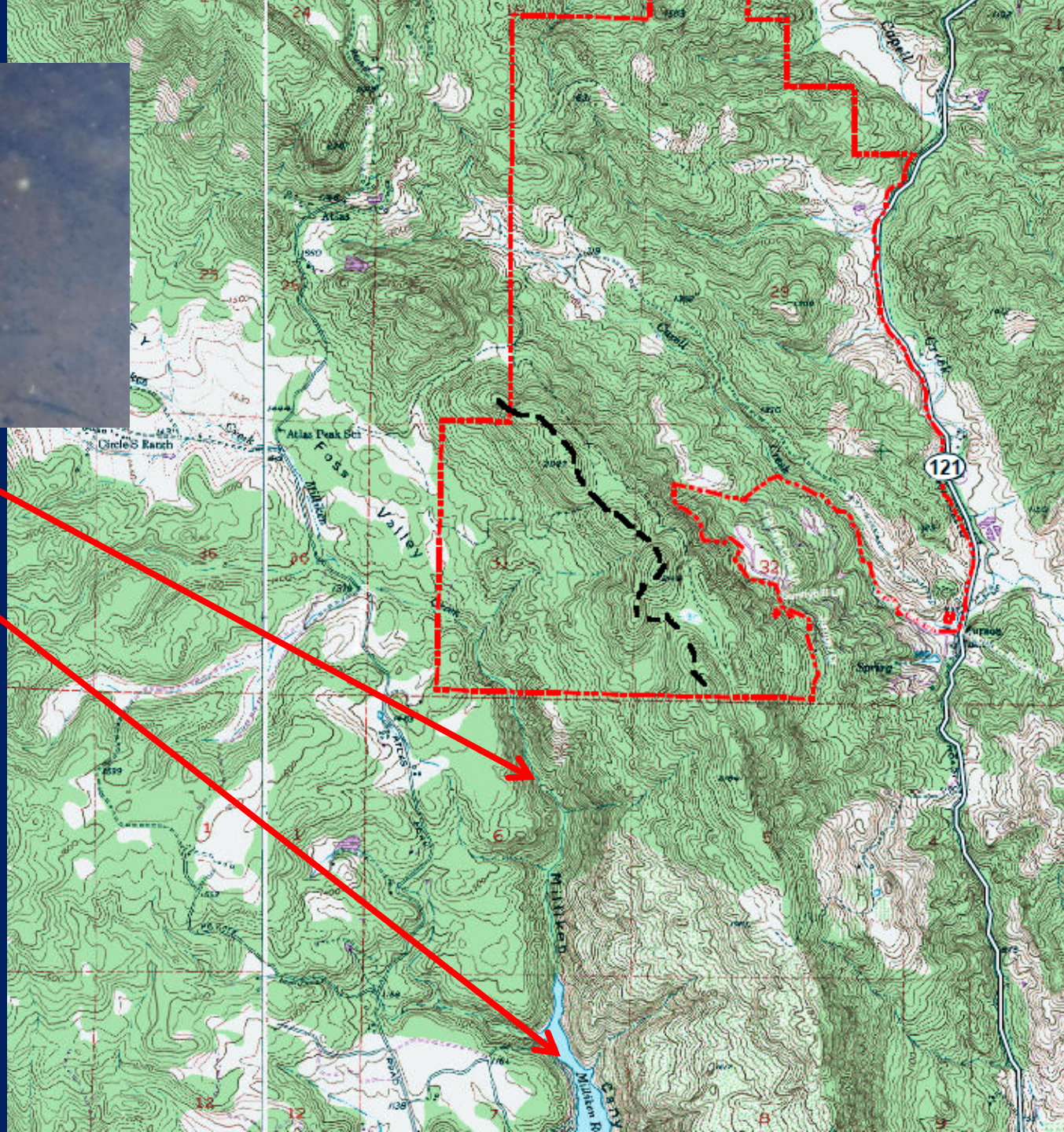
Road network and culverts associated with Walt Ranch vineyard development. These will change watershed hydrology increasing peak flows and decreasing baseflows

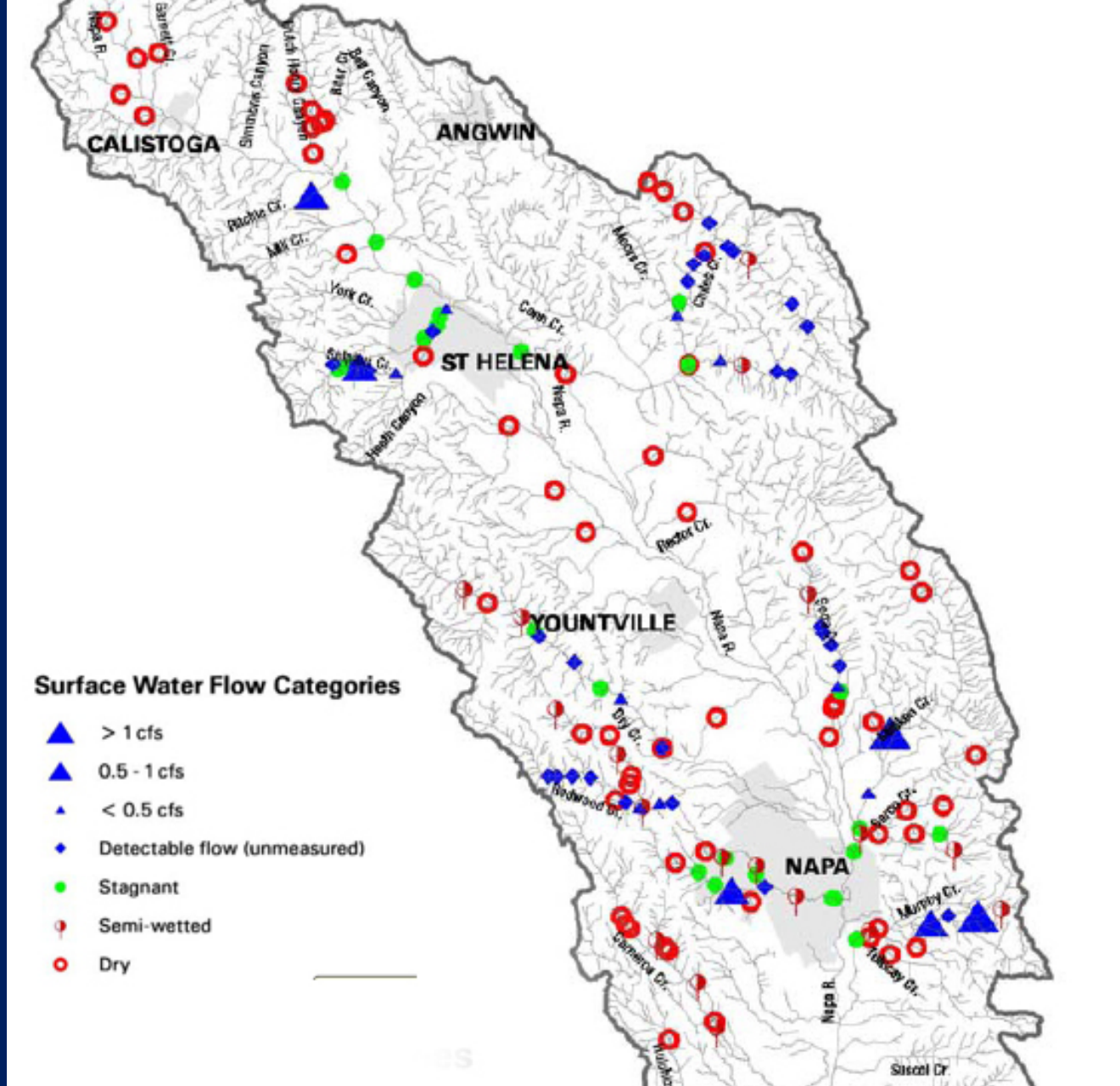


How roads elevate peak flows and depress base flows.



**The Walt Ranch
Development
will compromise
or eclipse one of
the few
productive
native trout
populations in
the Napa River.**

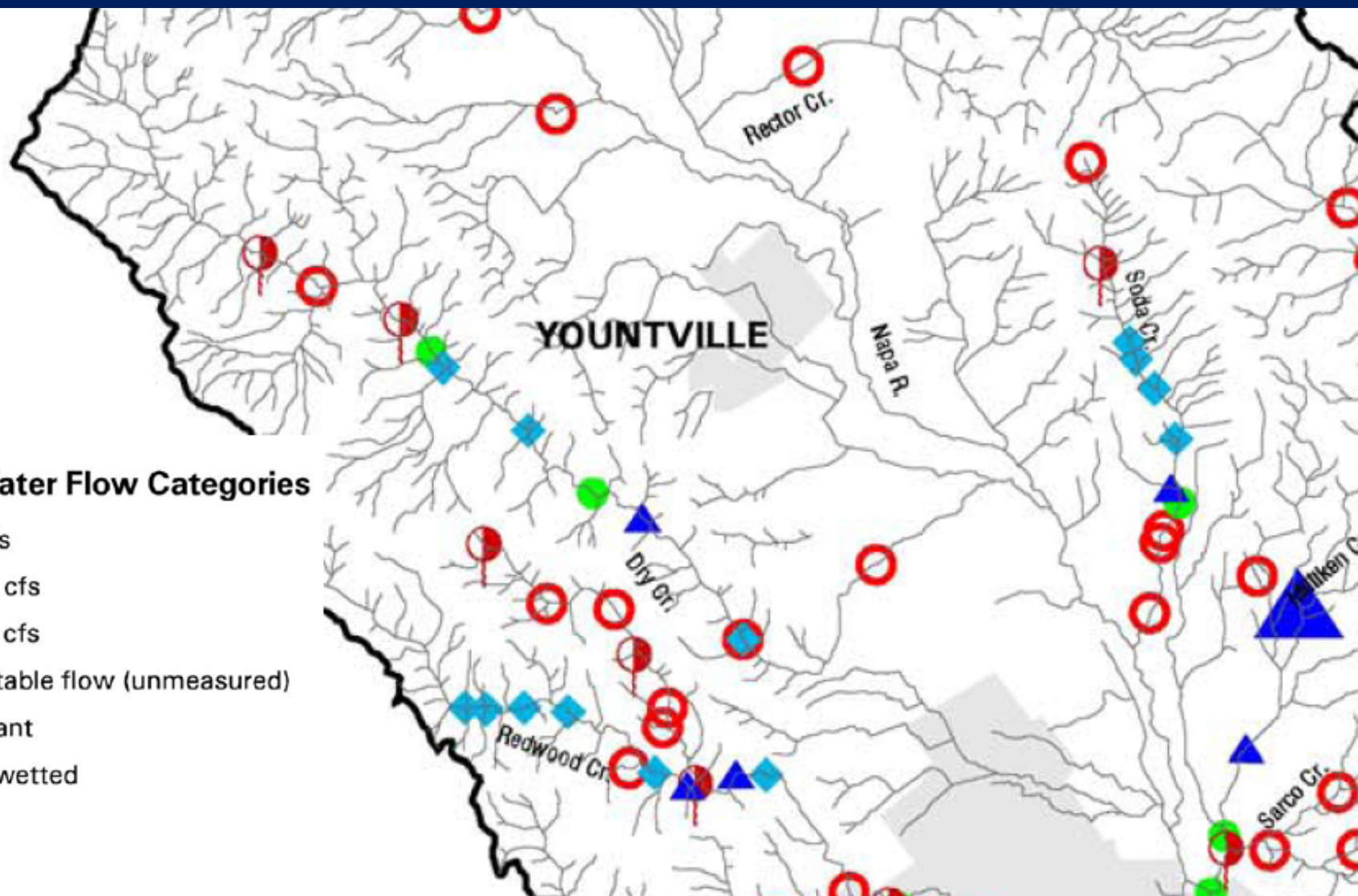




Map from Stillwater & Dietrich (2001) showing flows at various Napa River locations.

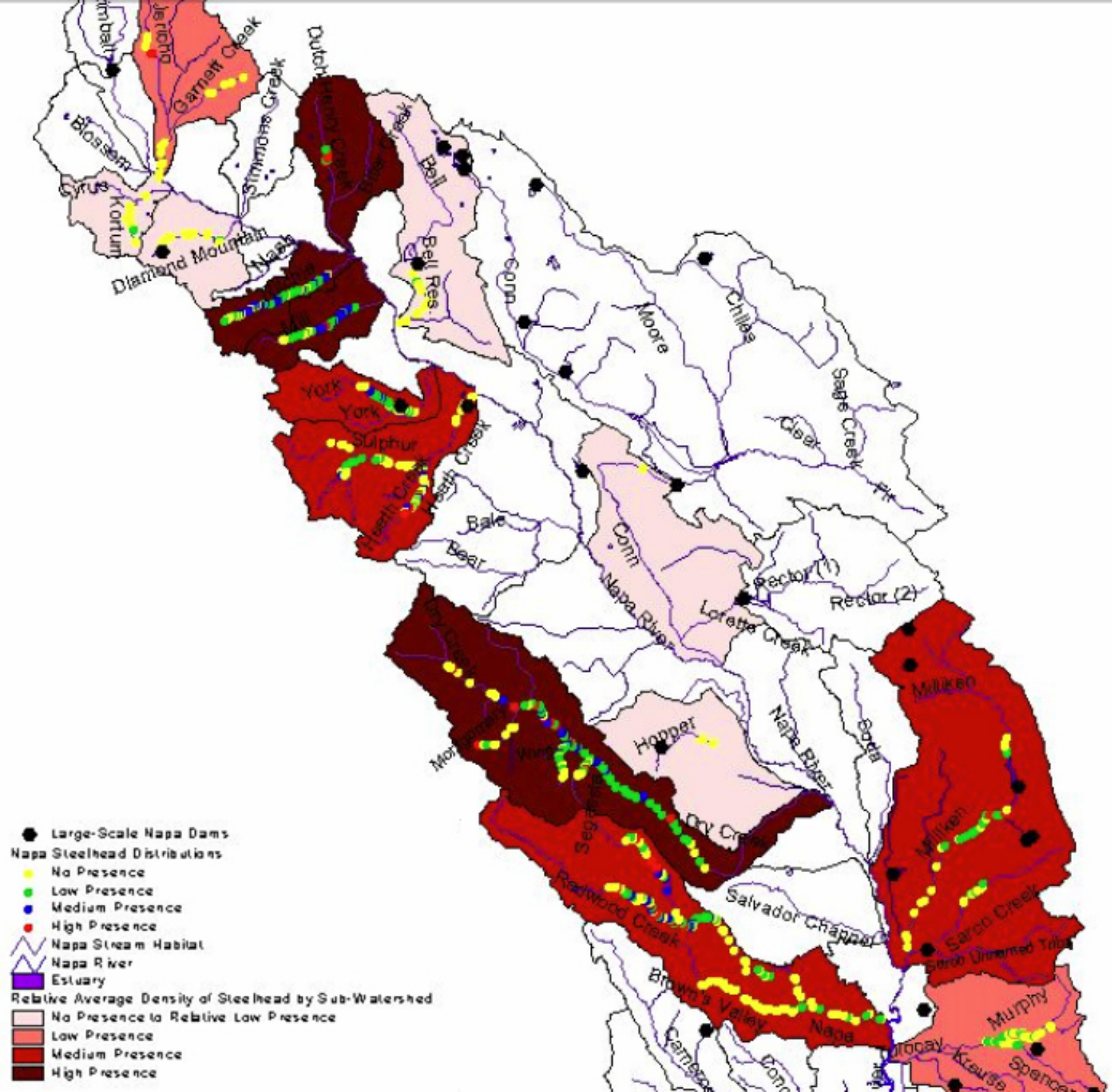
Surface Water Flow Categories

- ▲ > 1 cfs
- ▲ 0.5 - 1 cfs
- ▲ < 0.5 cfs
- ◆ Detectable flow (unmeasured)
- Stagnant
- ⦿ Semi-wetted
- Dry



Note upper Milliken Creek.

Napa River Basin-wide





Upper Milliken Creek.

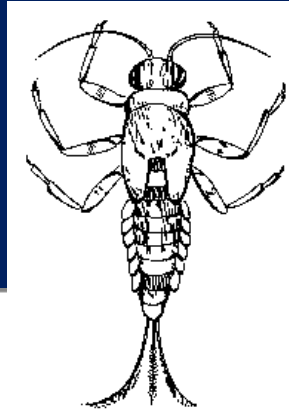
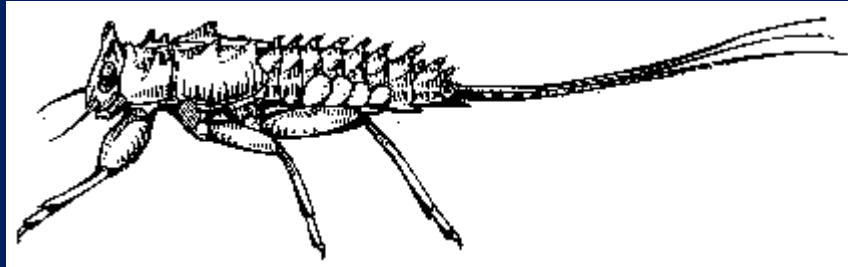
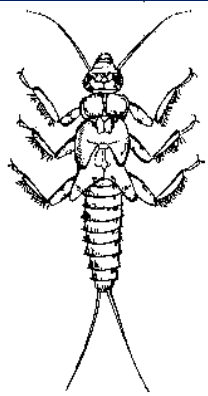
Trout = Steelhead – Both Need Protection

Resident rainbow trout above Milliken Reservoir are the same genetically as steelhead in the lower reaches of Milliken Creek.

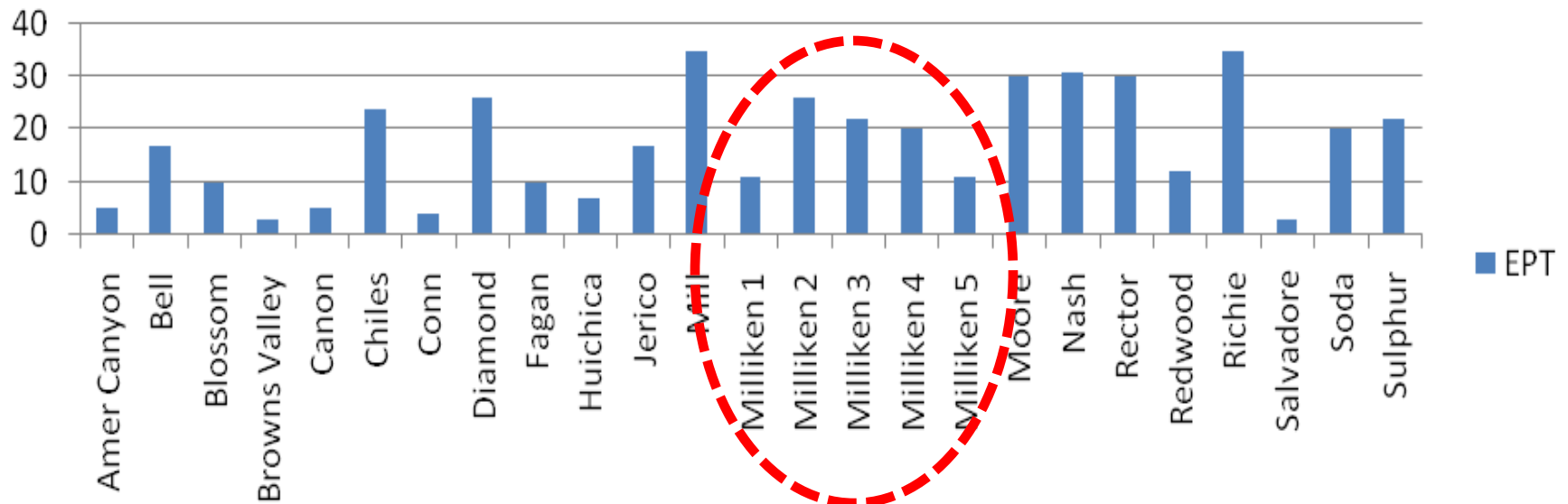
Stillwater and Dietrich (2001) estimated the adult steelhead run of the Napa River as 200 adults, which is near thresholds of concern for maintaining genetic diversity. Also, the number of downstream migrating steelhead smolts in years after drought are few. Native trout populations in upper Napa River are; therefore, very important as gene resources and may be needed for maintaining steelhead genetic diversity in the future.

Other San Francisco Bay tributaries are more impacted than the Napa River but may be restored in the future. Consequently, Napa River trout and steelhead gene resources are important for regional conservation.



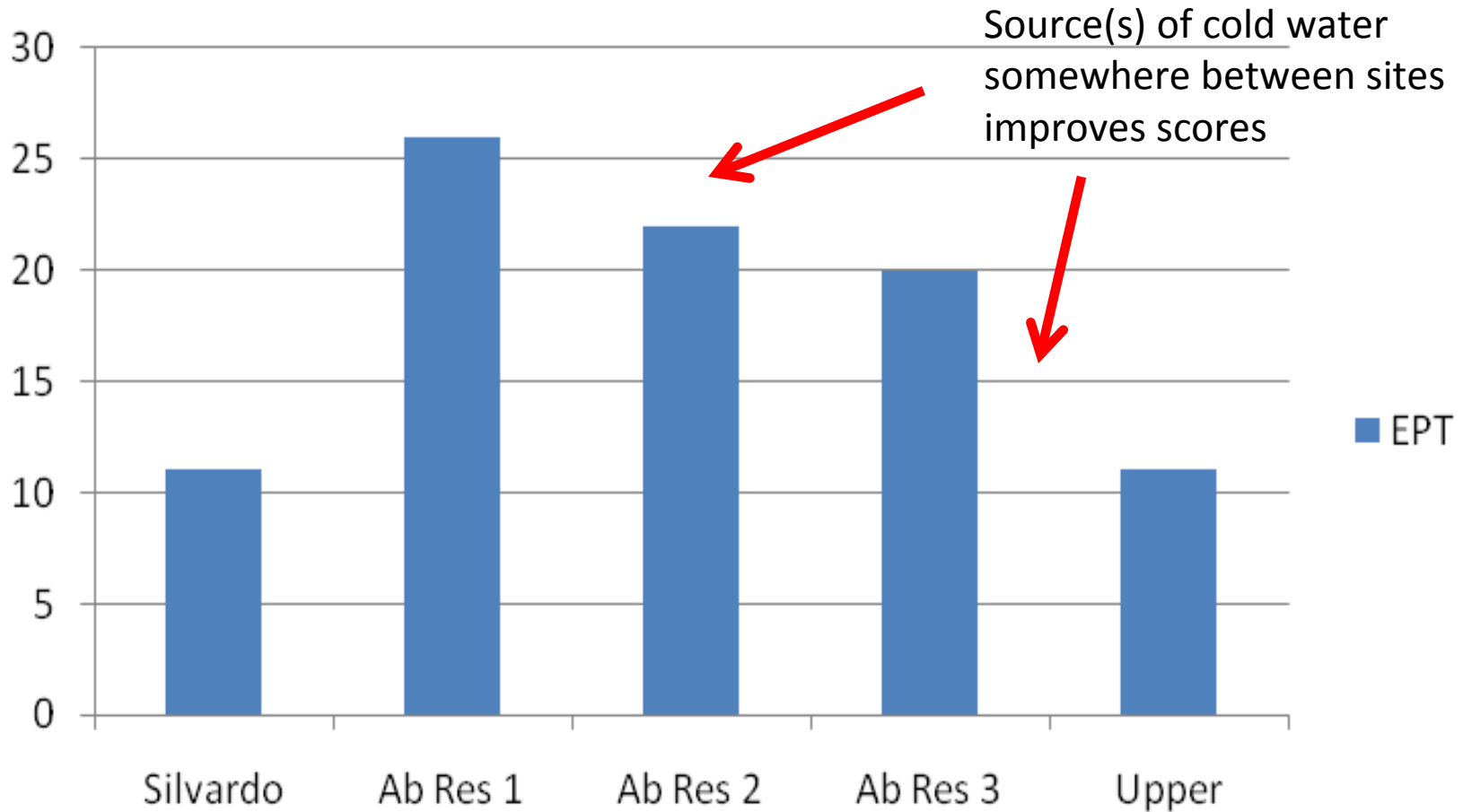


All Napa River EPT Scores for 2002 Samples



Milliken Creek above Milliken Reservoir has very good biodiversity as indicated by EPT index (Dewberry 2004) but health diminishes upstream.

Milliken Creek 2002 EPT Scores



Cumulative effects below Milliken Reservoir compromise diversity of pollution intolerant insects. Upper site also showing cumulative effects. Improving health at sites #2 and #3 suggests water source from volcanic formation slated for development by Walt Ranch.



Lower Milliken Creek has native steelhead trout and Chinook salmon.

Lower Milliken Creek

Already flow depleted and showing signs of ecological deterioration as a result of cumulative impacts from development.

Diminished flow into Milliken Reservoir will ultimately read out as less flow for steelhead and salmon below.

If Milliken Reservoir warms at depth, there will be less cold water for fish downstream.

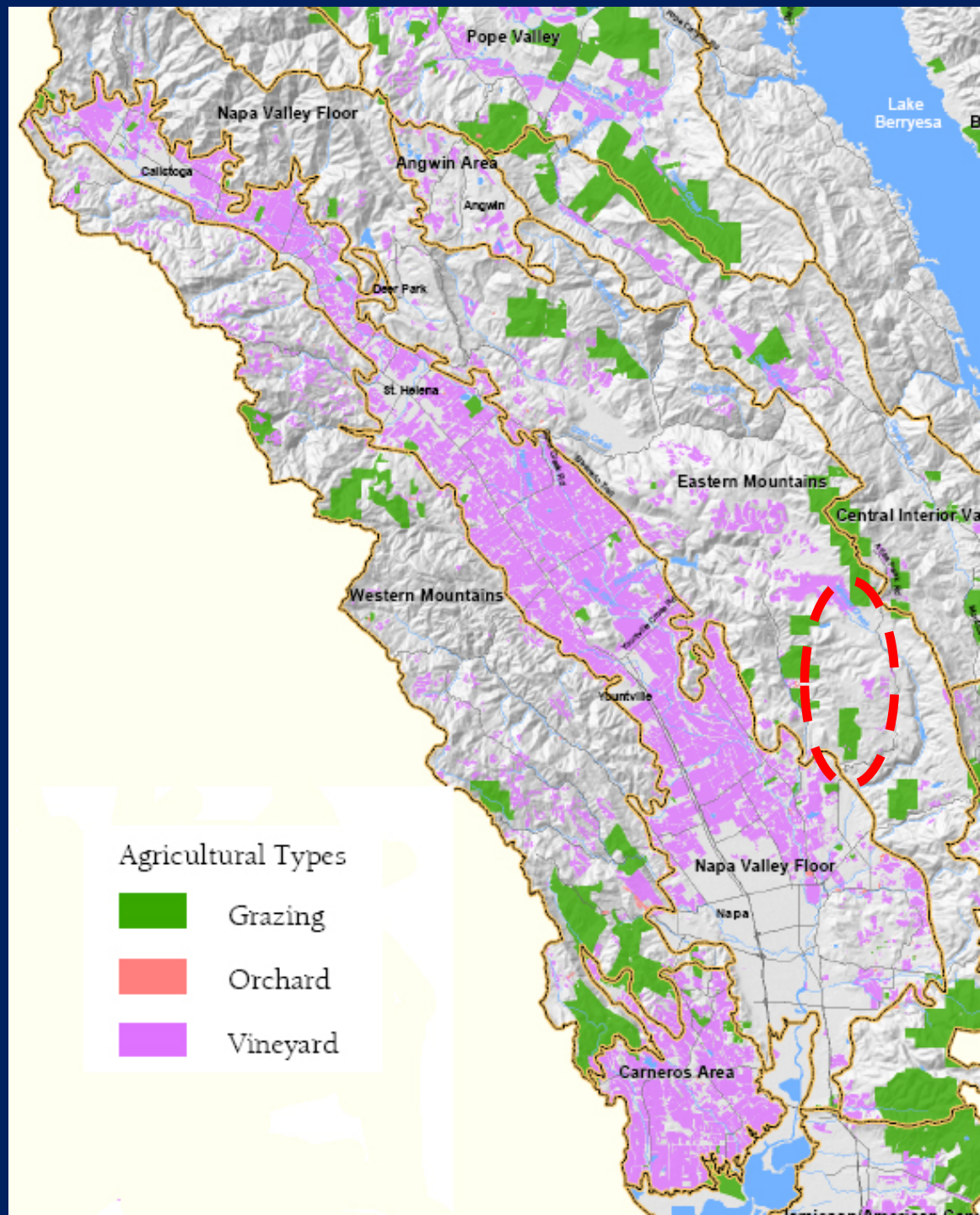
Should Milliken Reservoir pass a tipping point, effects on downstream biota could be profound and loss of salmon and steelhead would be likely.

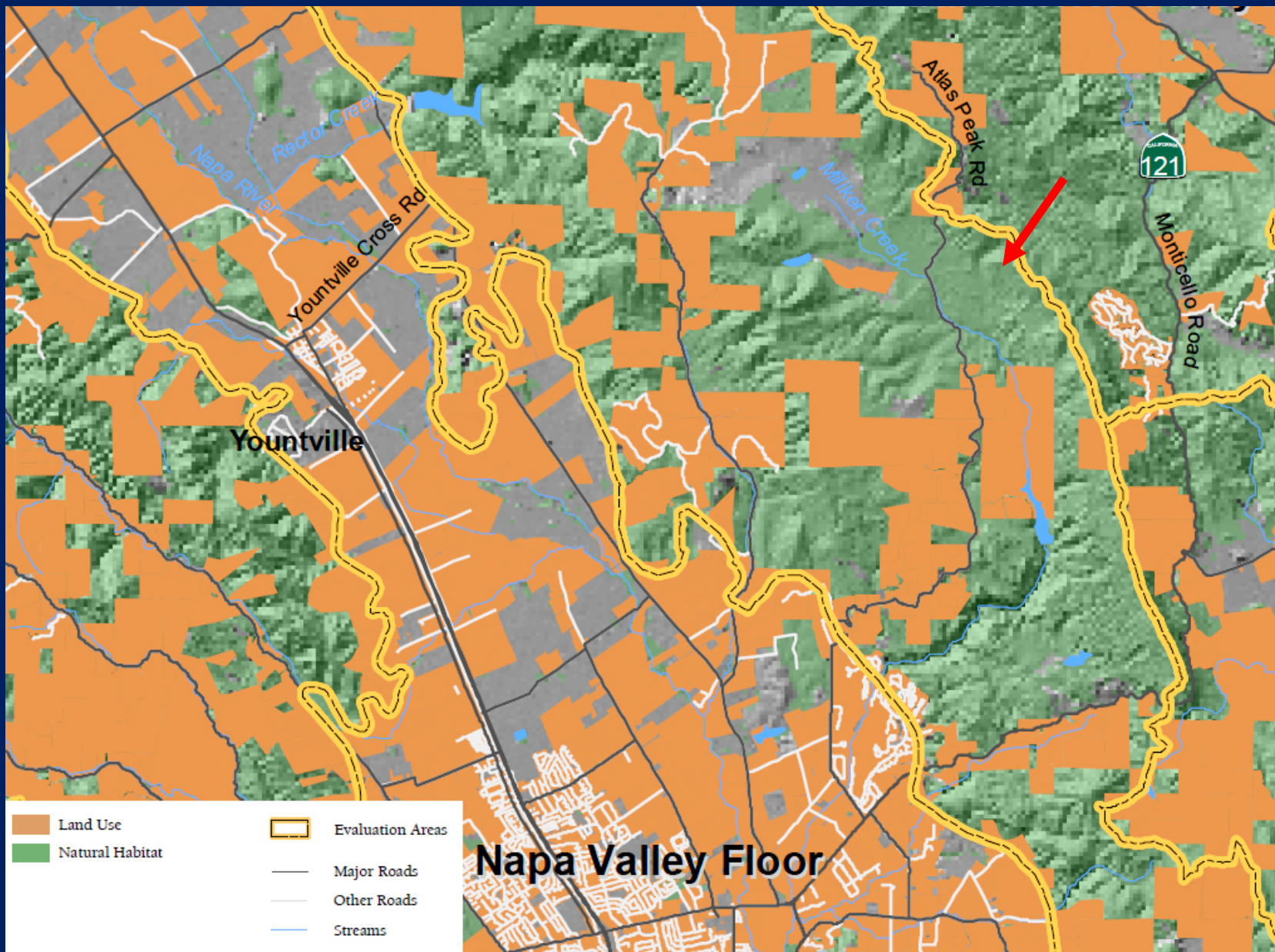
A photograph of a small waterfall in a forest stream. The water is cascading over dark, mossy rocks, creating white foam. The surrounding area is densely vegetated with green ferns, grasses, and other foliage. A small tree with yellow leaves is visible on the right side of the stream. The text "Maintaining flows in lower Milliken Creek for Beneficial Uses as Coldwater Habitat" is overlaid on the right side of the image.

**Maintaining flows
in lower Milliken Creek
for Beneficial Uses as
Coldwater Habitat**

Napa River ecosystem function needs some watershed sponge retained in order to provide drinking water and habitat for fish and animals.

The area proposed for development is a major source of ground water and clean surface water.





Land use map of the lower Napa River basin shows that upper Milliken Creek has low impacts. Red arrow is approximate location of Walt Ranch project in the middle of an intact watershed area.



Susceptibility of Milliken Reservoir to Cyanobacteria and Cyanotoxins

Cyanobacteria Like: Warm water and nutrients.

Walt Project will potentially effect Milliken Creek cold water flows, which will promote Milliken Reservoir warming. Also, decreased cold water inflow will lessen the size of cold water lens in reservoir that helps maintain surface temperatures below optimum for Cyanobacteria.

Increased nutrients and sedimentation from the Walt Ranch could potentially promote blooms.

Consequently, the Walt Ranch Development could push Milliken Reservoir past a tipping point where toxic Cyanobacteria proliferates.

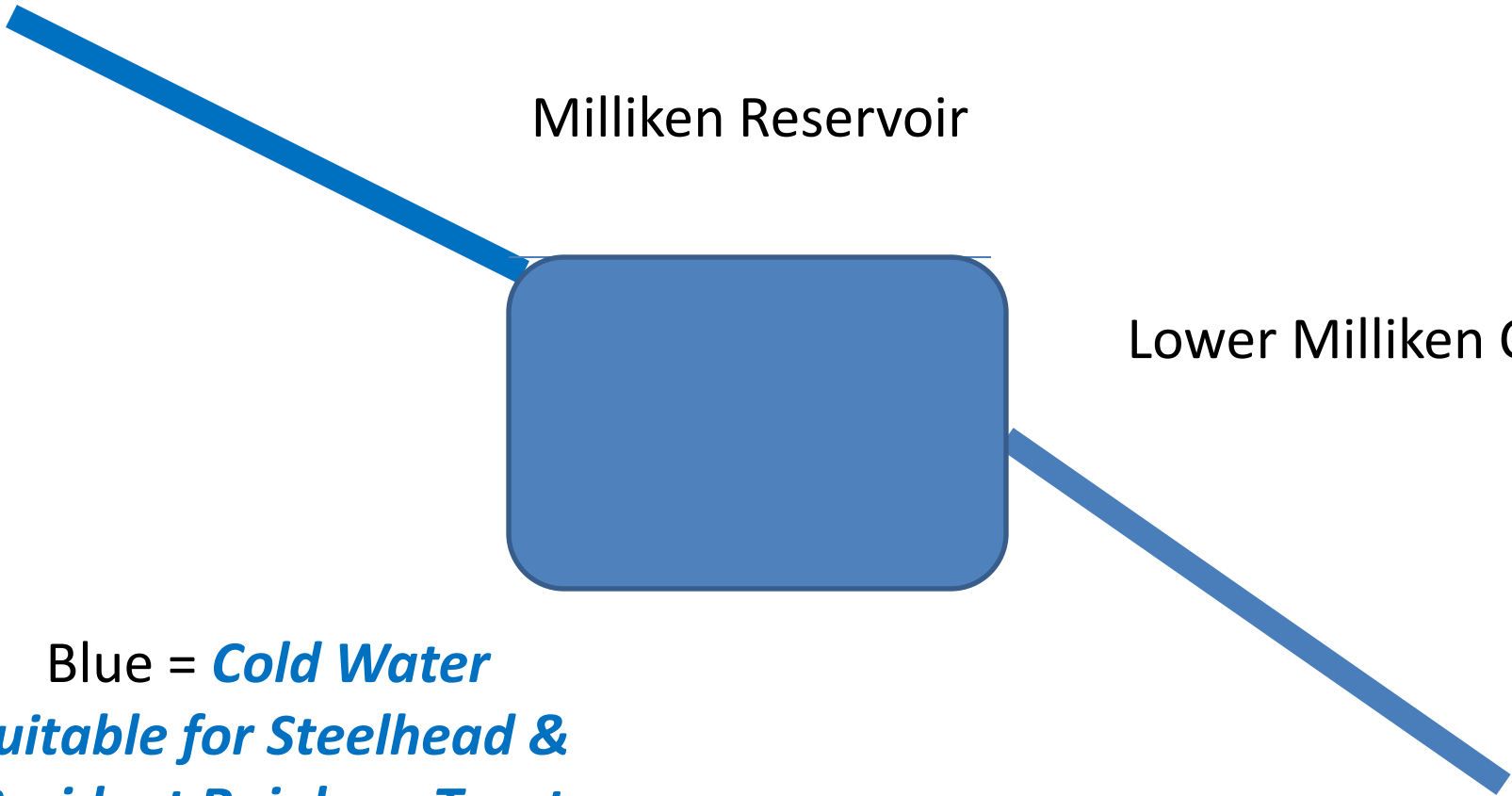
Upper Milliken Creek

Milliken Reservoir

Lower Milliken Creek

Blue = *Cold Water*
Suitable for Steelhead &
Resident Rainbow Trout

Winter Conditions



Upper Milliken Creek – **Supportive of Trout**

Milliken Reservoir

Warm Water Strata

Cold Water at Depth =
**Trout Habitat &
Buffer for Top
Layer Warming**

Lower Milliken Creek -
**Cold Water from
Stratified Layer**

Current Summer Conditions



Upper Milliken Creek – *No Longer Supportive of Resident Trout*

Milliken Reservoir – *More Susceptible to Cyanobacteria Blooms*

Enlarged Warm Water Strata

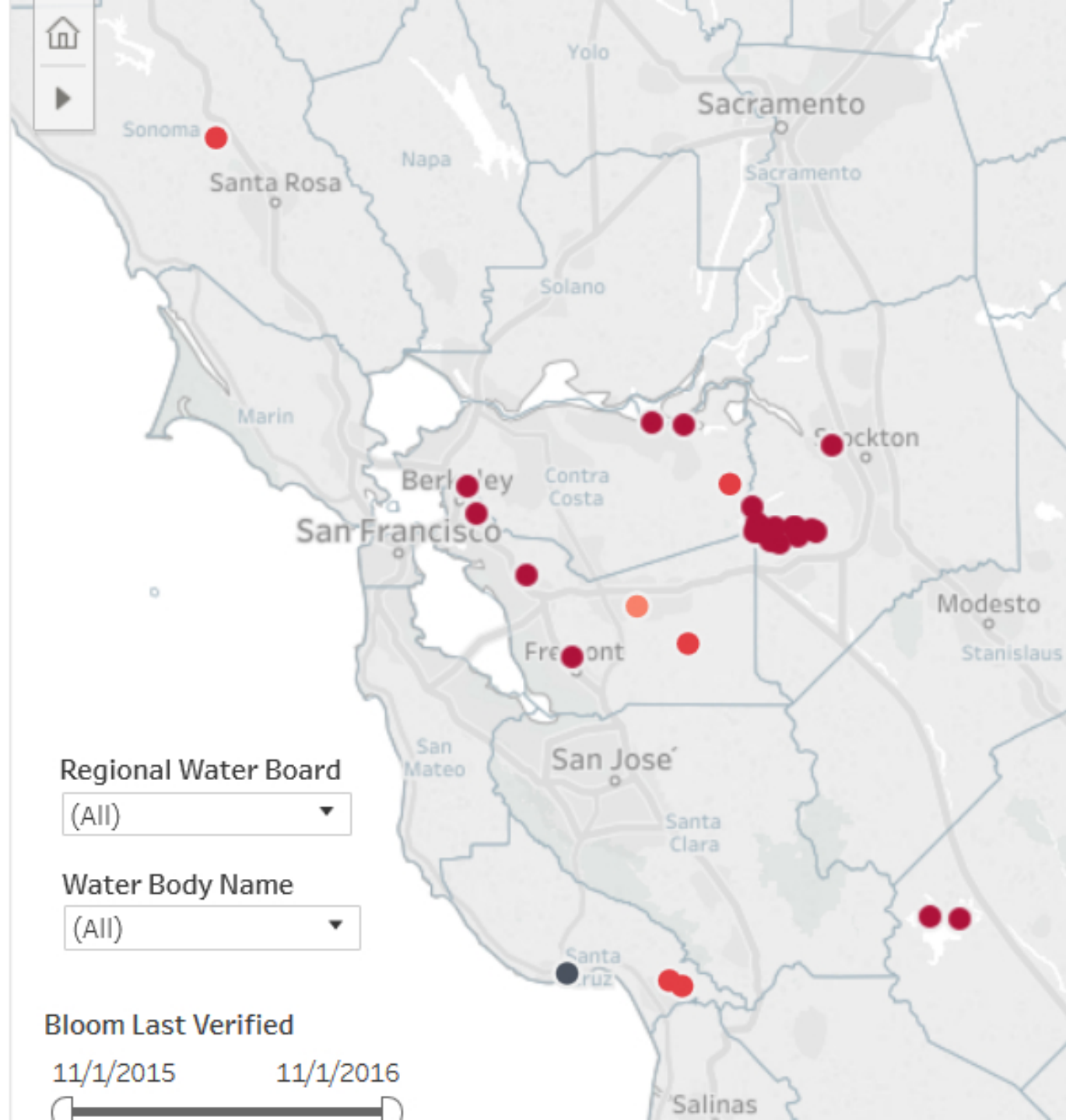
Diminished Cold Water at Depth –
Less Trout Habitat

Lower Milliken Creek –
No Longer Supportive of Steelhead Trout

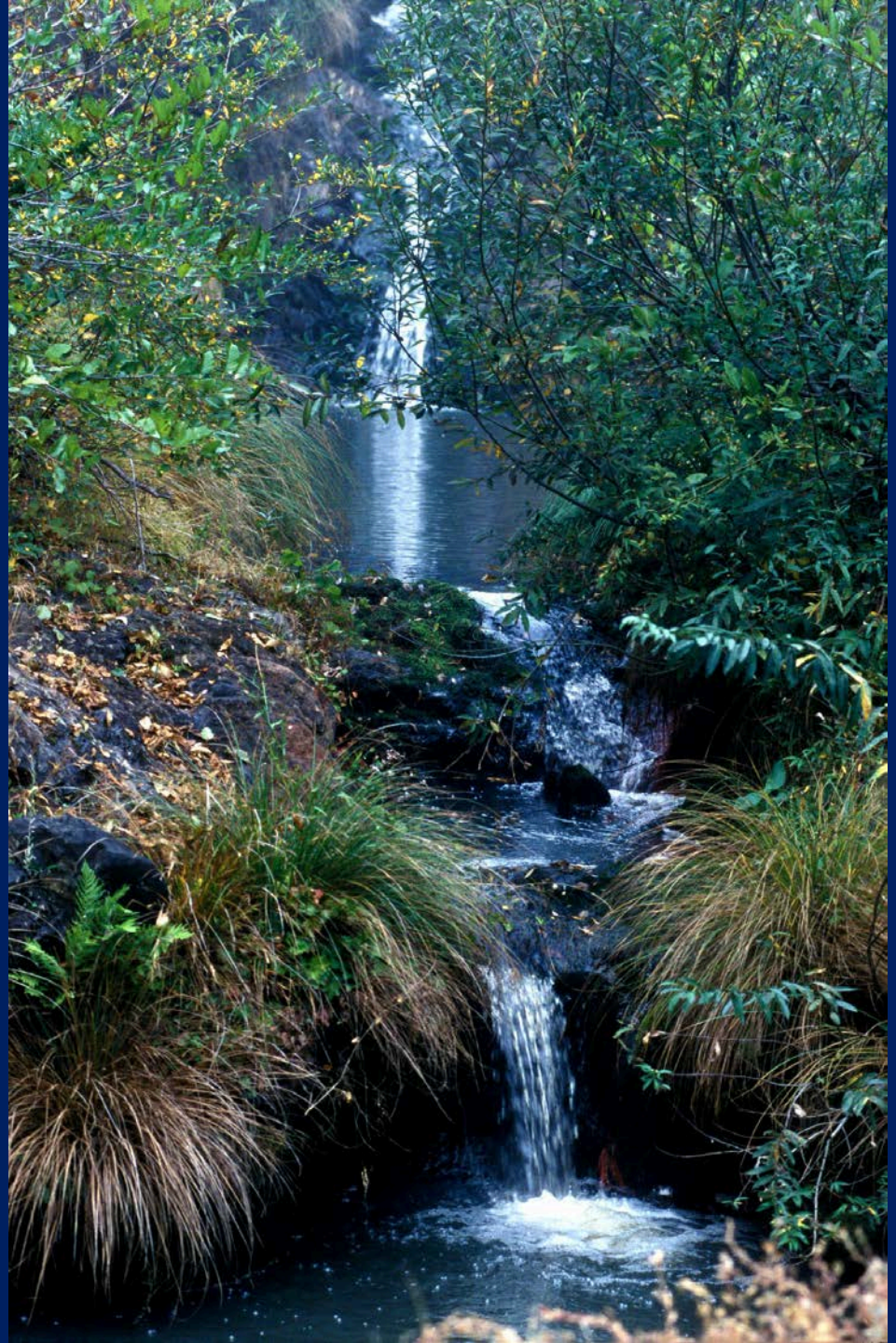
Summer Conditions with Depleted Flows

Locations of
Cyanotoxins in
the region
around Napa
County.

Note East San
Francisco Bay
reservoirs have
toxic
Cyanobacteria
blooms.

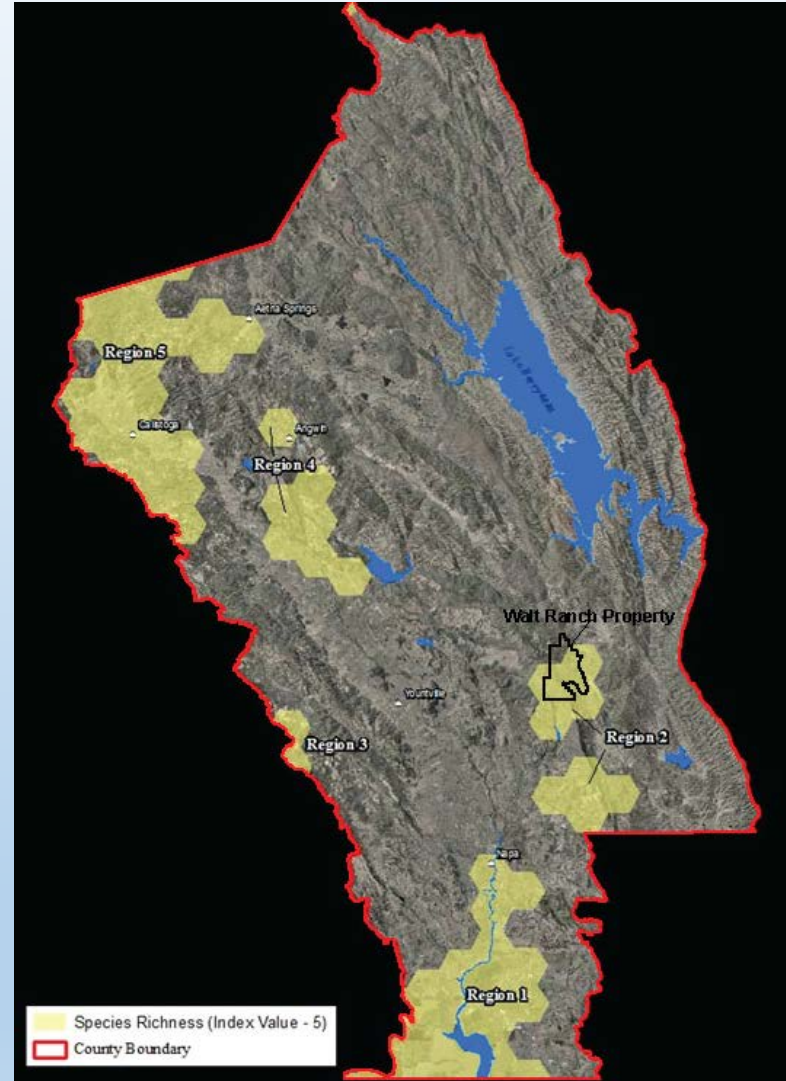


Questions?

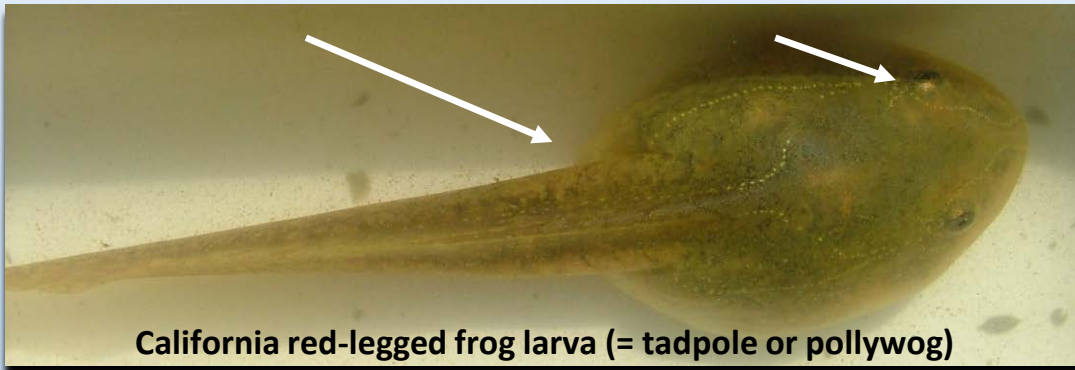


- 1. EIR Analysis Relative to Amphibians and Reptiles is Unreliable- Not Based on Best Scientific Information.**
- 2. EIR fails to Examine Specific Mechanisms of Impacts.**
- 3. EIR Fails to Discuss Necessary Mitigation Measures.**

Biodiversity Hotspot



Per Appendix K (Page 12): “A tadpole/subadult frog was also observed in Pool 2 during the day survey, but at the time biologists were unable to identify the species.”



Personnel Qualifications Appendix K (2012)

Person	Number of CRLF Surveys	Workshop?	Years in Consulting	Biology Degree	Focal Area
1	2	Yes	7	Yes	Ornithology
2	2 (assisted)	No	3	Yes	CEQA/NEPA
3	1 (assisted)	No	5	No	Wetlands
4	0	No	3	No	Environmental Analyst



EIR Does Not Adequately Address Specific Mechanisms of Impacts:

- 1. Wind-borne pesticides**
- 2. Changes in canopy cover and streamside cover.**
- 3. Avoidance buffers proximate to streams and ponds.**
- 4. Changes to stream volumes, water quality, stream beds, and stream courses.**
- 5. Foraging habitat.**
- 6. Introduction of non-native predators.**



EIR Does Not Discuss Necessary or Adequate Mitigation Measures: MMRP Does Not Mention the Word Frog

In the FEIR, there are two Mitigation Measures:

- 1. Measure 4.2-11 - Bullfrog Control**
- 2. Measure 4.2-4 - Obtaining a USACE 404 Permit.**

