

Section 1
INTRODUCTION

SOURCES OF DATA..... 1-1
OBJECTIVES 1-1
SCOPE..... 1-1
FUNDING SOURCES 1-2
TECHNICAL ADVISORY COMMITTEE (TAC) MEMBERS 1-2
WATERSHED INTRODUCTION 1-2
 Sub-Units 1-3
 Ownership 1-3
 Topography 1-4
 Elevation..... 1-5
INTERVIEWS 1-5
REFERENCES 1-5

TABLES

1-1 Sub-units of the Tehama West Watershed 1-4
1-2 Land Ownership in the Tehama West Watershed 1-4
1-3 USGS 7.5 Minute Quadrangles..... 1-5

FIGURES

1-1 General Watershed Location
1-2 Watershed Boundary
1-3 Sub-units
1-4 Ownership
1-5 Topography
1-6 USGS 7.5 Minute Quadrangles
1-7 Elevation Bands

APPENDICES

1-1 Resident Interviews
1-2 Stream Reach Photographic Assessment

Section 1 INTRODUCTION

SOURCES OF DATA

Data used to assemble the Tehama West Watershed Assessment comes from federal, state, and local sources. Data sources are based primarily on published material. However, whenever possible, data previously unavailable, such as academic theses, are incorporated into the document with concurrence from the Technical Advisory Committee (TAC). Agencies responsible for providing available data include but are not limited to:

- United States Forest Service (USFS)
- United States Department of Agriculture (USDA)
- Department of Transportation (DOT)
- Department of Water Resources (DWR)
- California State Water Resources Control Board (SWRCB)
- Bureau of Land Management (BLM)
- United States Geological Survey (USGS)
- National Oceanic and Atmospheric Administration (NOAA)
- California Department of Fish and Game (CDFG)
- Natural Resources Conservation Service (NRCS)
- California Department of Forestry and Fire Protection (CDF)

OBJECTIVES

The mission of the Tehama West Watershed Assessment is to gather and integrate existing information on the physical, cultural, and demographic variables that characterize the Tehama West Watershed at the present and in the past. The project is primarily an existing conditions report that will be used as an educational tool to help guide residents and stakeholders in prioritizing future watershed projects. This watershed assessment can be considered the initial step in developing our knowledge of existing conditions within the watershed ecosystem. It will be amended and extended as new information becomes available.

SCOPE

Information collected from previous studies has been organized according to a five-step process, consistent with the goal of the CalFed Watershed Program, promoting collaboration and integration among community-based watershed efforts. This watershed assessment is intended to assist the efforts of the Tehama County Resource Conservation District (TCRCD) in maintaining a viable stakeholder-driven means for assessing and implementing watershed-based projects and management. The basic approach to data collection and organization includes:

- Step 1 – Characterization of the watershed
- Step 2 – Description of current conditions
- Step 3 – Description of reference (historical) conditions

Step 4 – Synthesis of information
Step 5 – Conclusions and recommendations

Information collected and organized in this watershed assessment has been developed in collaboration with the TCRCD Technical Advisory Committee (TAC).

FUNDING SOURCES

The watershed assessment project is funded through a grant from the State Water Resources Control Board through the CalFed Watershed Program. Many other contributions from state, federal, and private sources have made this assessment possible.

TECHNICAL ADVISORY COMMITTEE (TAC) MEMBERS

The TAC members are comprised of TCRCD staff and specialists from cooperating agencies. TAC members provided information and technical review for this project.

TAC Members include:

Frank Barron – Crane Mills
Larry Branham – United States Department of Agriculture
Bill Burrows – Sunflower CRMP
Andrea Carter – Bureau of Land Management
Guy Chetelat – Regional Water Quality Control Board, Central Valley Region
Vicky Dawley – Tehama County Resource Conservation District
Eda Eggeman – California Department of Fish and Game
Dennis Heiman – State Water Resources Control Board
Tom McCubbins – Tehama County Resource Conservation District, Project Manager
Harry McQuillen – United States Fish and Wildlife Service
John Metz – Sacramento River Trust
Ernie Ohlin - Tehama County Flood Control & Water Conservation District
Chuck Schoendienst – California Department of Forestry and Fire Prevention
Fraser Sime – California Department of Water Resources
Mike VanDanne – United States Forest Service, Mendocino National Forest

WATERSHED INTRODUCTION

The TCRCD found the need to provide a comprehensive evaluation of environmental conditions within the Tehama West Watershed. The watershed is a Category I Watershed in the California Unified Watershed Assessment (NRCS 2005). Watersheds with Category I status meet one or more of the following criteria:

1. Contains water bodies listed as having impaired beneficial uses (State Water Resources Control Board's Clean Water Act Section 303(d) list) (SWRCB 2002 update)
2. Watersheds identified by local groups as needing improvements (United States Department of Agriculture Geographic Priority Areas [Environmental Quality Incentives Program] database)

3. Watersheds with very high wildfire or fuel hazards potential (California Department of Forestry and Fire Protection Wildfire Potential database)
4. Watersheds with proposed and listed criteria of aquatic, wetland-threatened, and endangered species (California Department of Fish and Game, Natural Heritage Division, Natural Diversity Database)
5. Watersheds with impairments in the quality of aquatic and riparian systems [California Rivers Assessment (CARA) professional judgment assessment (PJA)]
6. Watersheds with streams or riparian areas identified as not functioning or functioning at risk [from the Proper Functioning Condition Assessment (PFC) in CARA]

According to the California Unified Watershed Assessment, the Tehama West Watershed meets four of the above criteria (Criteria 3 through 6 from the above list) (NRCS, 2005).

The Tehama West Watershed is located in northern California along the western edge of the Sacramento Valley. It is bordered by the Cottonwood Creek Watershed to the north, Mendocino County to the west, Glenn County to the south, and the Sacramento River to the east. The general location of the watershed is shown in Figure 1-1. The Tehama West Watershed encompasses 668,168 acres and includes 11 sub-units. The watershed contains 11 major tributaries to the Sacramento River. The watershed boundary, its major tributaries, and general layout are included in Figure 1-2.

Rural lifestyles and a population density of approximately five persons per square mile generally characterize the watershed. The largest community in the watershed is Red Bluff, an incorporated city in Tehama County, with a current population of 13,147. Other incorporated towns in the watershed include Corning and Tehama. Unincorporated towns include Flournoy, Gerber, Paskenta, and Proberta. Ranching, farming, and timber are the primary resource activities throughout the watershed. Cattle, pasture and range, orchards, and grain hay dominate the agricultural activities.

Sub-Units

The Tehama West Watershed Assessment is comprised of 11 sub-units. The sub-units used for this report are summarized in Figure 1-3. These sub-units were delineated using USGS topographic maps. These watersheds vary from the standard Calwater units as the latter did not appear to present a reasonable picture of the true boundaries. Table 1-1 shows the sub-units along with tributary length, acreage, and percent of the watershed.

Ownership

General ownership within the watershed is shown in Figure 1-4. Land ownership in the Tehama West Watershed is approximately 15 percent public and 85 percent private (California Resources Agency, 2004). The number of acres in each ownership classification is shown in Table 1-2. Land ownership and other administrative boundaries are discussed in more detail in Section 3, “Demographics, Land Use, and Economic Activity.”

Sub-unit	Tributary Length (miles)	Acreage	Percent of Watershed
Blue Tent Creek	10.0	15,142	2.3%
Burch Creek	24.1	94,199	14.1%
Dibble Creek	33.9	21,327	3.2%
Elder Creek	72.1	96,350	14.4%
Jewett Creek	21.4	35,902	5.4%
McClure Creek	22.4	29,761	4.5%
Oat Creek	22.4	44,612	6.7%
Red Bank Creek	56.2	74,450	11.1%
Reeds Creek	20.9	48,814	7.3%
Spring Creek	4.5	14,494	2.2%
Thomes Creek	70.0	193,117	28.9%
Total	358.0	668,168	100%

Owner	Total Acres	Percent of Watershed
Bureau of Land Management	14,745	2.21%
California Department of Fish and Game	760	0.11%
California Department of Parks and Recreation	260	0.04%
Department of Defense	27	< 0.01%
State Lands Commission	410	0.01%
The Nature Conservancy	250	0.04%
US Fish and Wildlife Service	2,767	0.41%
US Forest Service	83,826	12.55%
Subtotal Government Acres	103,045	15.37%
Grane Mills	55,530	8.32%
Sierra Pacific Industries	1,001	0.15%
Unclassified Private Ownership	508,592	76.17%
Subtotal Other Acres	565,122	84.63%
Total	668,168	100.00%

Source: California Resources Agency

Topography

The topography of the Tehama West Watershed varies significantly from the flat valley areas of the Sacramento Valley to the mountainous upper reaches to the west. Watershed topography is included as Figure 1-5. A summary of the USGS Quadrangle Maps within the watershed is shown in Table 1-3 and is included as Figure 1-6. The slope gradient and aspect of the watershed vary significantly, (as discussed in detail later in this report) but the valley floor is comparatively flat with a 0 to 5% slope.

A more detailed discussion of events leading to the topography of the watershed can be found in Sections 2 and 4, “General Watershed History” and “Geology, Geomorphology, and Soils.”

Elevation

The average elevation of the watershed is approximately 1,000 feet above mean sea level (msl), with the lowest elevation of 150 feet msl at the Sacramento River, climbing steeply above 8,000 feet msl in the western mountains. South Yolla Bolly Mountain reaches the highest elevation in the watershed at 8,094 feet msl. The town with the highest elevation, Paskenta, sits at 743 feet msl (USGS, 1976). Watershed topography with elevation bands is included as Figure 1-7.

Table 1-3
USGS 7.5 MINUTE QUADRANGLES

Ball Mountain	Balls Ferry	Bend	Black Butte Dam
Blossom	Buck Rock	Cold Fork	Corning
Flounroy	Foster Island	Gerber	Hall Ridge
Henleyville	Hooker	Kirkwood	Log Spring
Los Molinos	Lowrey	Mendocino Pass	Mitchell Gulch
Newville	Oxbow Bridge	Paskenta	Raglin Ridge
Red Bank	Red Bluff East	Red Bluff West	Riley Ridge
Sehorn Creek	South Yolla Bolly	Vina	West of Gerber

Source: Bureau of Land Management

INTERVIEWS

Interviews of long time residents of the watershed were conducted by VESTRA Resources Inc. in November 2004. The goal of the interviews was to develop a historical perspective of western Tehama County watersheds and determine the important issues for the watershed assessment. Appendix 1-1 contains a list of the questions that were asked and a summary of the interviewee responses.

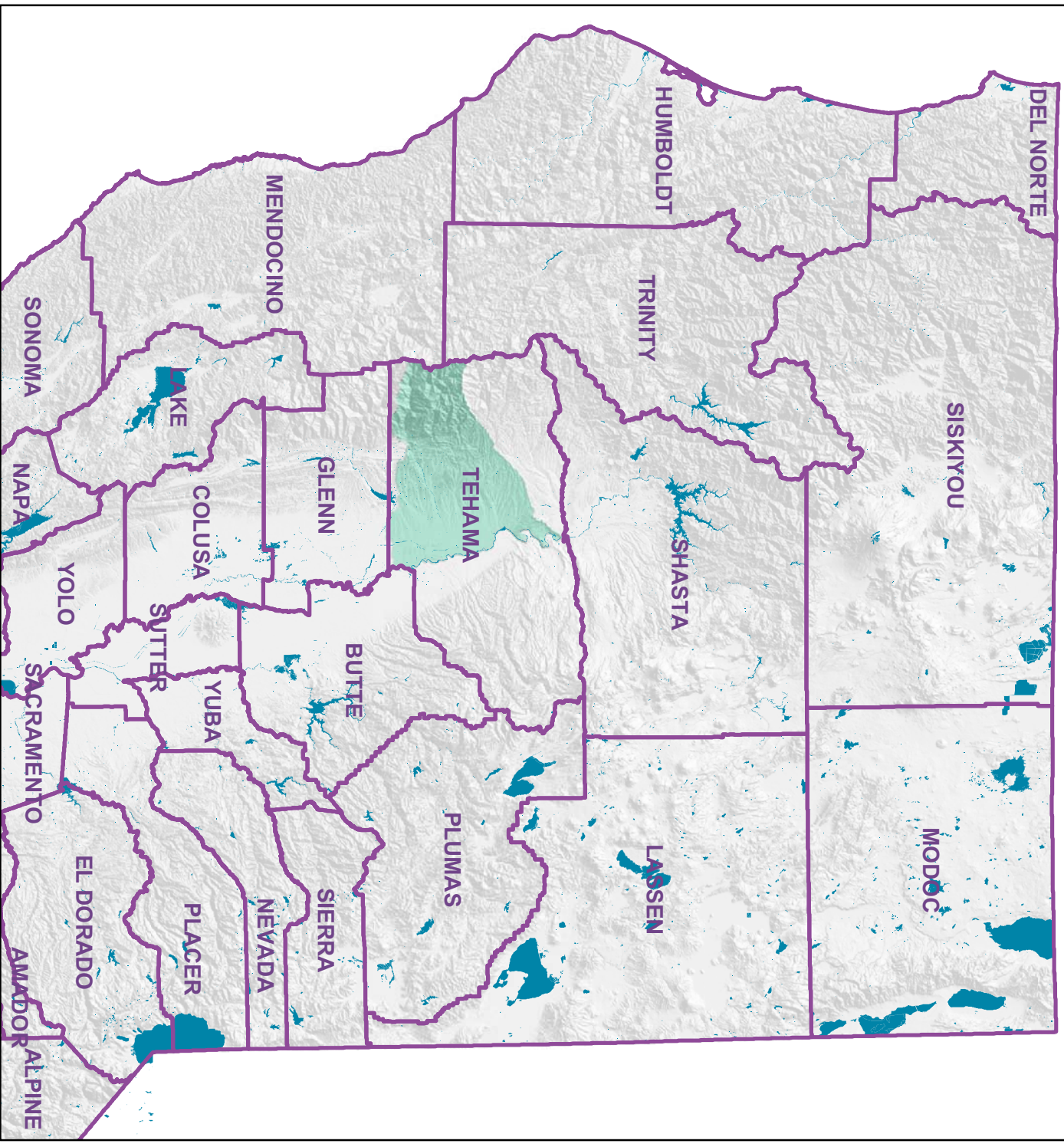
STREAM REACH PHOTOGRAPHIC ASSESSMENT

As part of the Tehama West Watershed Assessment, VESTRA Resources, Inc. (VESTRA) completed a review of historic air photos to evaluate historical changes to project area streams within the developed area of the Tehama West Watershed. For Reeds, Red Bank, Elder, and Thomes Creeks historic aerial photographs were reviewed and changes that have occurred during the time span of the photographic sequence. This review is included as Appendix 1-2.

REFERENCES

- California Resources Agency. 2004. In *The California Legacy Project*. Cited March 24, 2005. Available from World Wide Web: < <http://legacy.ca.gov>>.
- NRCS (National Resources Conservation Service). 2005. In *Clean Water Action Plan (CWAP) - California Unified Watershed Assessment (1998)*. Cited March 24, 2005. Available from World Wide Web: <http://www.ca.nrcs.usda.gov/features/projects/cwap>>.
- SWRCB (State Water Resources Control Board). 2002 update. *Clean Water Act, Section 303(d) list*.

USGS (U.S. Geological Survey). 1976. 7.5 Minute Quadrangle Topographic Maps, 1968, Photorevised 1976.



- Legend**
- Tehama West Watershed
 - Lake, Pond, or Reservoir
 - County Boundary

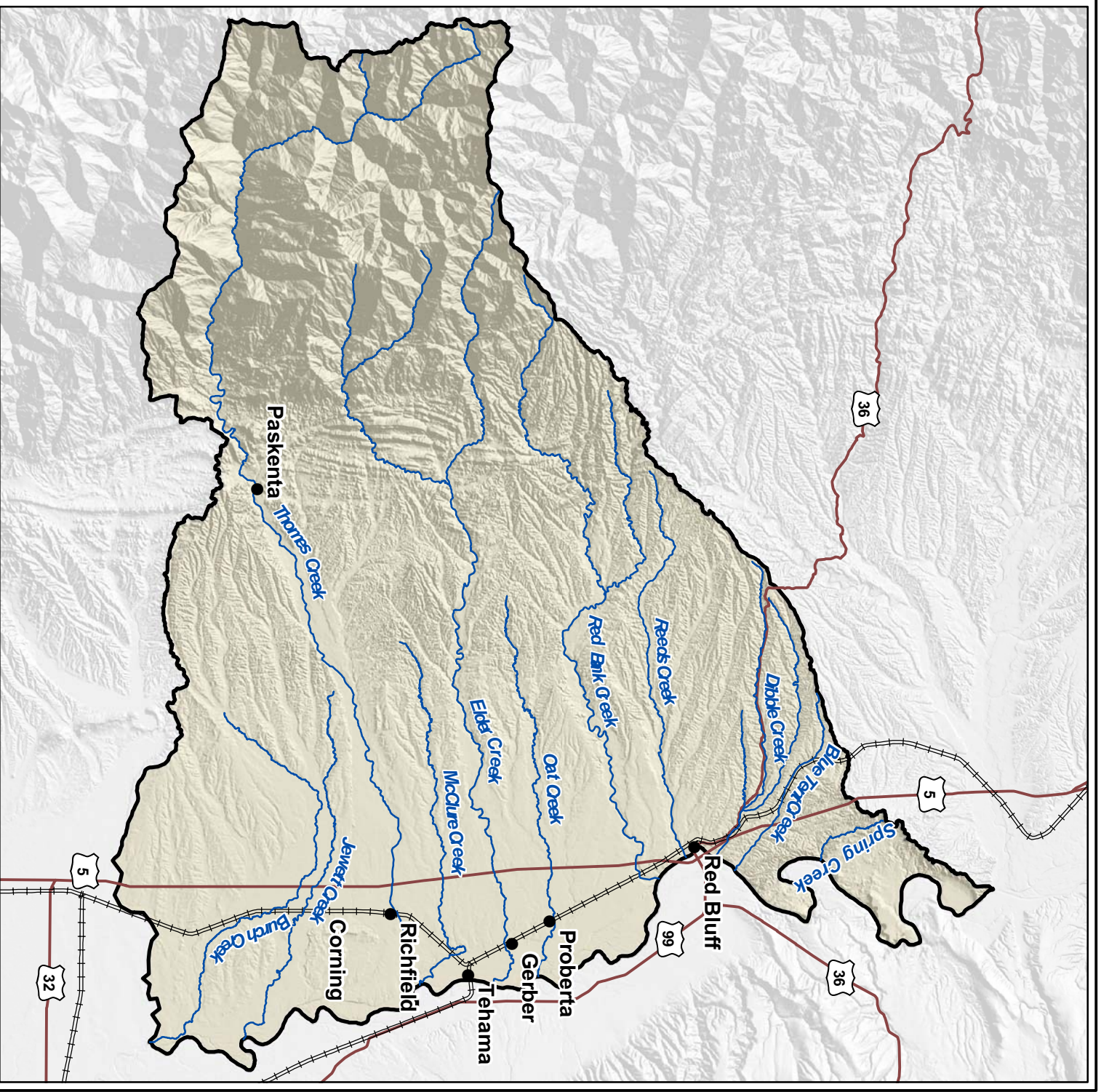


VESTRA

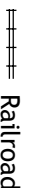
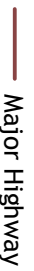




SOURCE: CALIFORNIA SPATIAL INFORMATION LIBRARY

FIGURE 1-1
GENERAL WATERSHED LOCATION
TEHAMA WEST WATERSHED ASSESSMENT



Legend

-  Railroad
-  Major Highway
-  Major Tributary
-  Tehama West Watershed

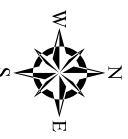
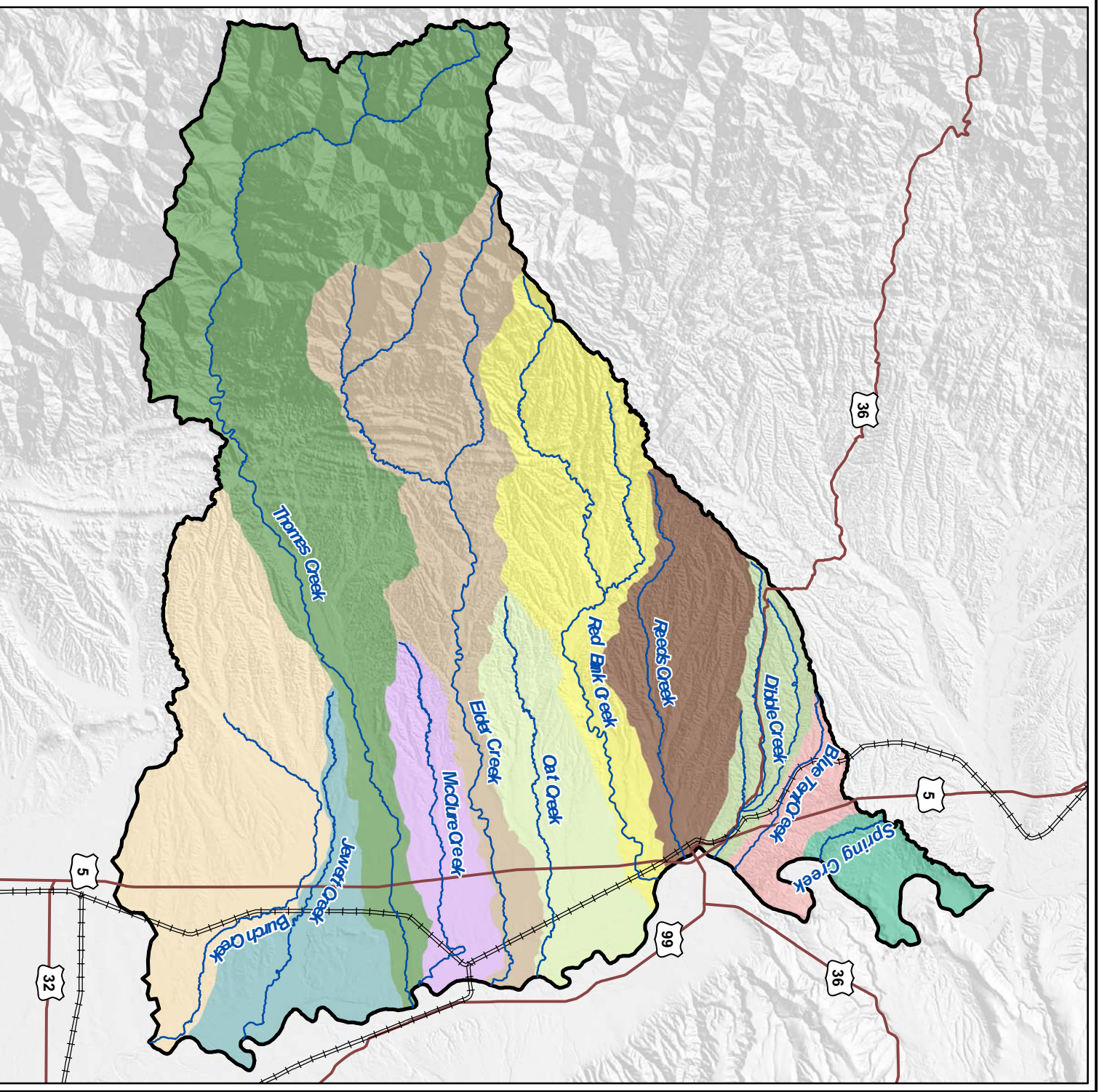














FIGURE 1-2
 WATERSHED BOUNDARY
 TEHAMA WEST WATERSHED ASSESSMENT



Legend

- | | | | | | | | |
|---|-----------------------|---|-----------------|---|----------------|---|--------------|
|  | Railroad |  | Blue Tent Creek |  | Jewett Creek |  | Reeds Creek |
|  | Major Highway |  | Burch Creek |  | McClure Creek |  | Spring Creek |
|  | Major Tributary |  | Dibble Creek |  | Oat Creek |  | Thomas Creek |
|  | Tehama West Watershed |  | Elder Creek |  | Red Bank Creek | | |

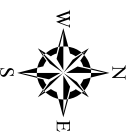
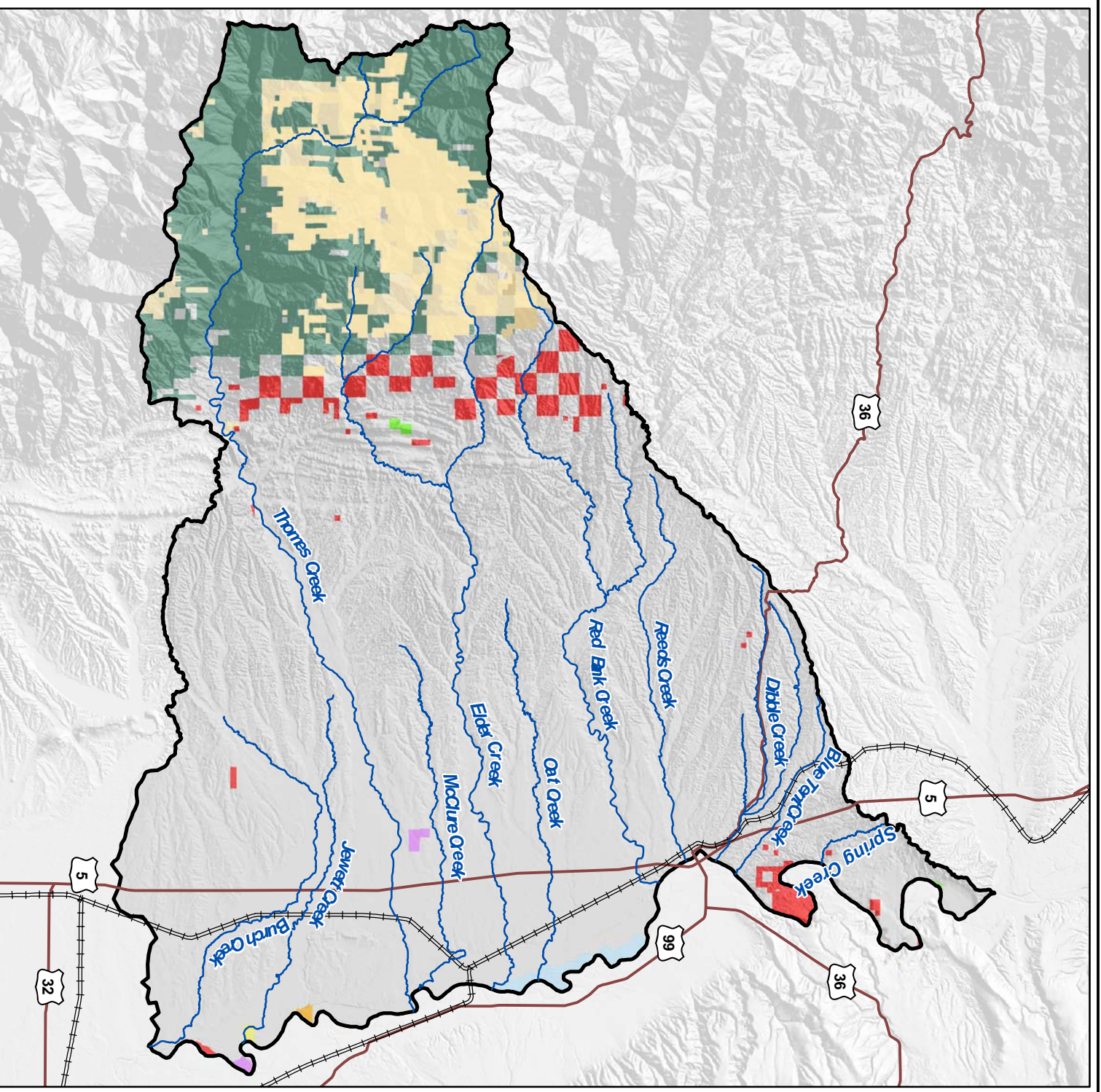

















FIGURE 1-3
SUB-UNITS



Legend

- | | | | | | |
|--|-----------------------|---|---|---|---|
|  | Railroad |  | Bureau Of Land Management (14,745 acres) |  | US Fish and Wildlife Service (2767 acres) |
|  | Major Highway |  | CA Dept of Fish and Game (760 acres) |  | USDA Forest Service (83,826 acres) |
|  | Major Tributary |  | CA Dept of Parks and Recreation (260 acres) |  | Private (508,592 acres) |
|  | Tehama West Watershed |  | Department of Defense (27 acres) |  | Crane Mills (55,530 acres) |
| | |  | State Lands Commission (410 acres) |  | Sierra Pacific Ind. (1,001 acres) |
| | |  | The Nature Conservancy (250 acres) | | |

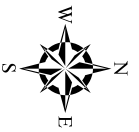
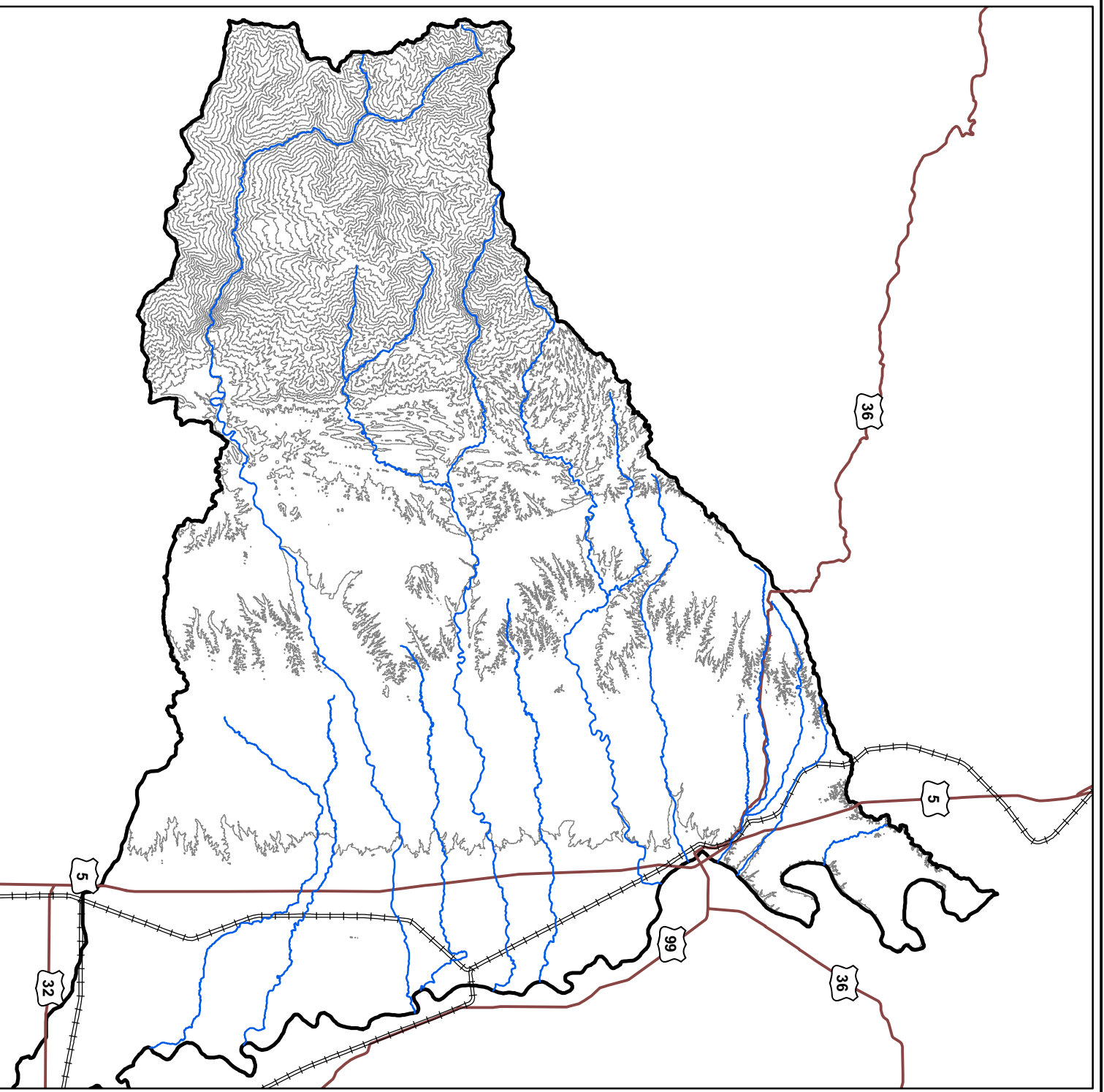







FIGURE 1-4
TEHAMA WEST WATERSHED ASSESSMENT



Legend

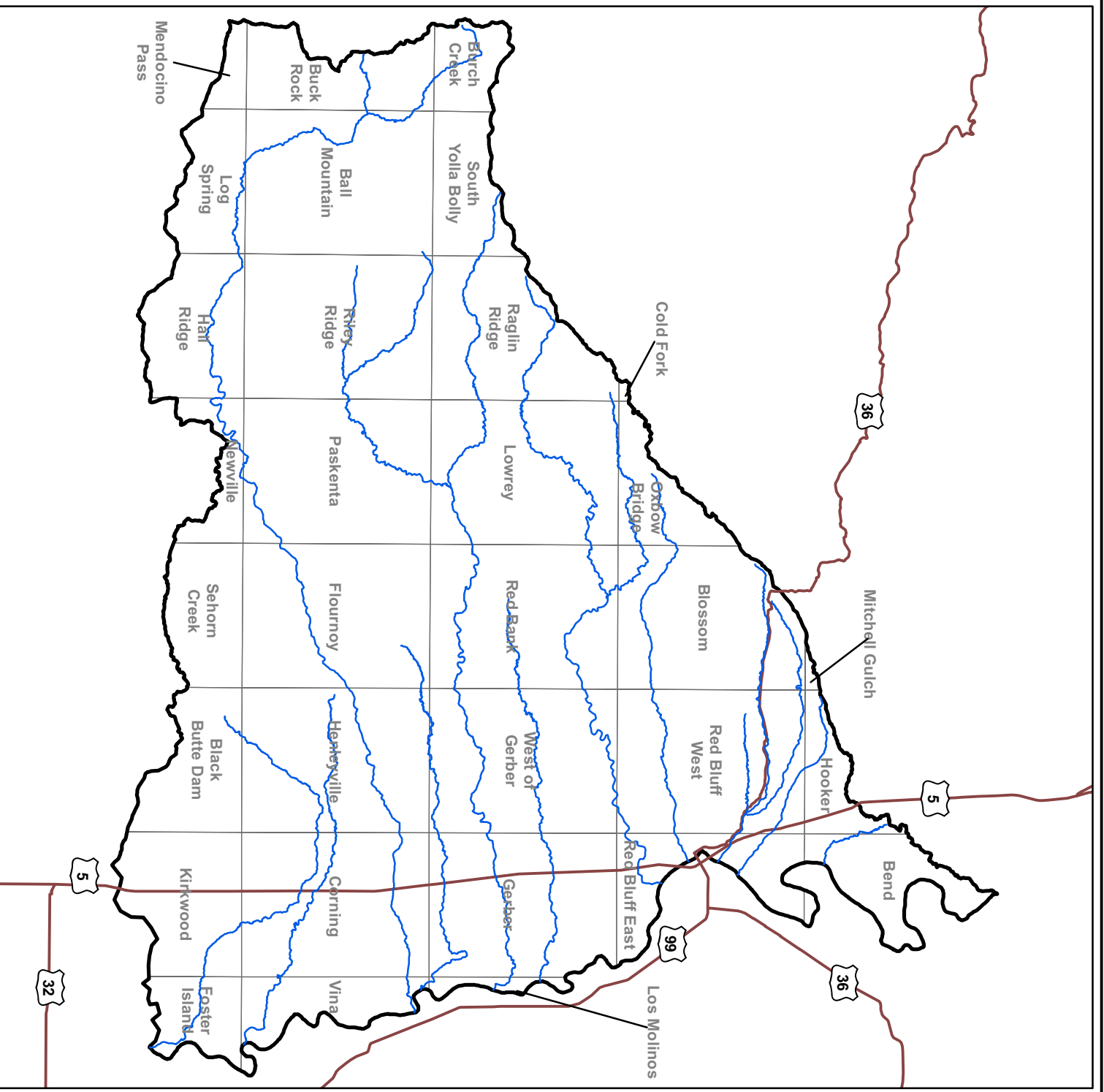
-  Railroad
-  Major Highway
-  Major Tributary
-  Contour Line
-  Tehama West Watershed



VESTRA



FIGURE 1-5
TOPOGRAPHY
TEHAMA WEST WATERSHED ASSESSMENT



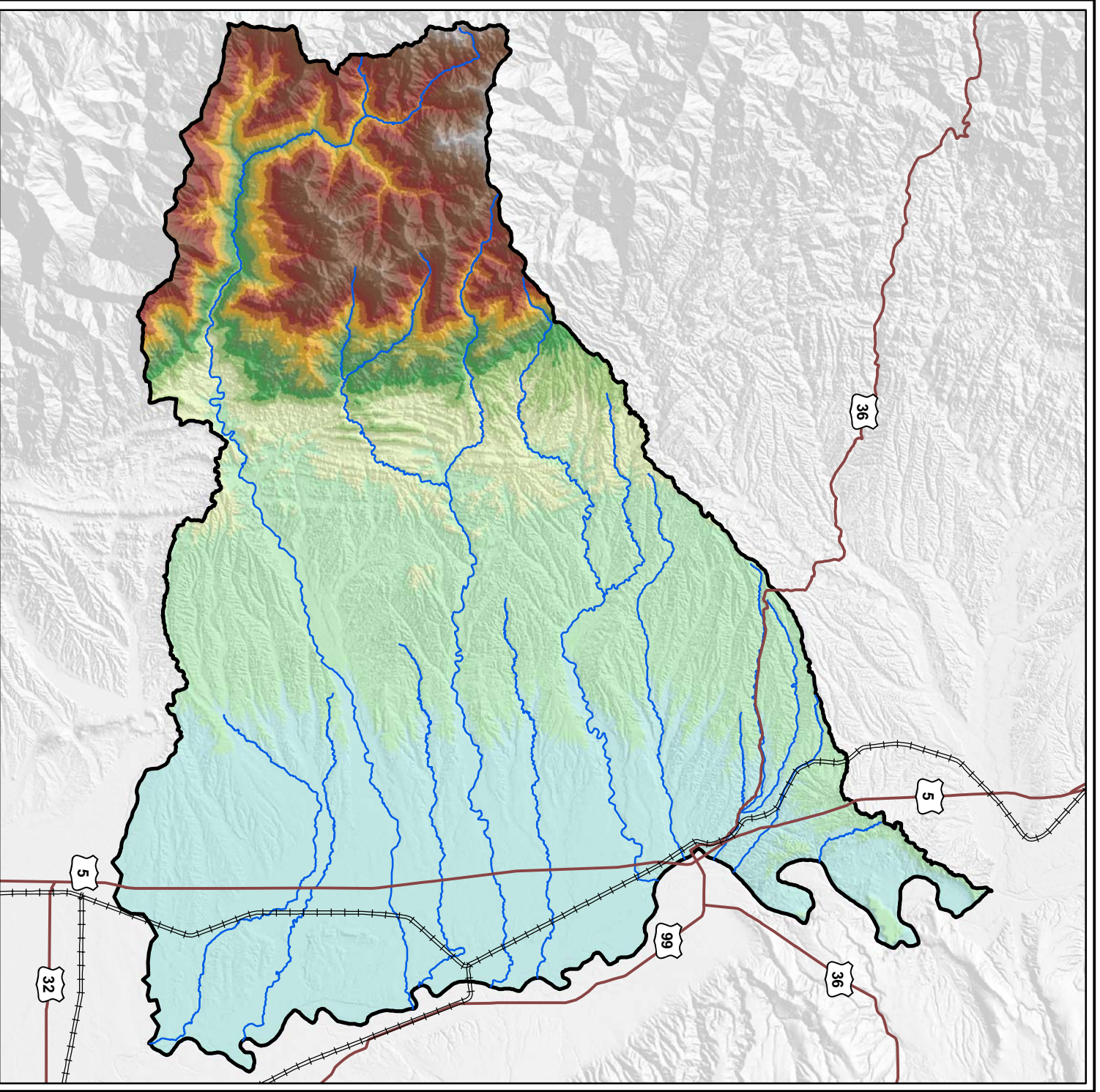
Legend

- Major Highway
- Stream, Creek, or River
- Tehama West Watershed
- USGS Quad Boundary



FIGURE 1-6

USGS 7.5 MINUTE QUADRANGLES
TEHAMA WEST WATERSHED ASSESSMENT



Legend

- | | | | | | | | |
|---|-----------------------|---|--------------------|---|--------------------|---|--------------------|
|  | Railroad |  | 500 feet |  | 3,001 - 3,500 feet |  | 6,001 - 6,500 feet |
|  | Major Highway |  | 501 - 1,000 feet |  | 3,501 - 4,000 feet |  | 6,501 - 7,000 feet |
|  | Major Tributary |  | 1,001 - 1,500 feet |  | 4,001 - 4,500 feet |  | 7,001 - 7,500 feet |
|  | Tehama West Watershed |  | 1,501 - 2,000 feet |  | 4,501 - 5,000 feet |  | 7,501 - 8,000 feet |
| | |  | 2,001 - 2,00 feet |  | 5,001 - 5,500 feet |  | 8,001 - 8,500 feet |
| | |  | 2,501 - 3,000 feet |  | 5,501 - 6,000 feet | | |



FIGURE 1-7
TEHAMA WEST WATERSHED ASSESSMENT



Appendix 1-1

RESIDENT INTERVIEWS

Interviewee No. 1

Landowner in Reeds Creek watershed

LAND USE:

- Landholdings in their area have decreased in size.
- Many 40-acre parcels exist, increasing the population and bringing an urban attitude.
- Their ranch now has many new neighbors from the 40-acre sites.
- Glad to see the BLM active with their property, but they do not manage it properly.
- There is not enough grazing on public lands and too much on some private lands.
- Feels conservation easements are great programs; glad to see landscapes protected.
- There is not enough education on conservation easements.
- There is an increased need for conservation easements.

AGRICULTURE:

- Irrigated lands have gone down due to the high increase of power.
- They had sprinklers, but they were too labor intensive and cost too much.
- They had a lot of deer when they had irrigated pastures.
- They used to irrigate and then wait for their well to recharge at night.
- They also pumped a lot of sand, and it was hard on the sprinklers.
- Now they just do a few acres of dryland oats and sudan grass hay.
- Their ranch was historically farmed by another family.
- The family could cross the creek to the fields over the gully, now the gully is incised making travel impossible.

FIRE AND FUELS:

- Historically, there were big burns, but didn't hurt the trees.
- Now there is too much brush, making a big fire risk.
- The Moonshadow subdivision has a lot of brush.

VEGETATION:

- Noticed oaks dying in their area. There is not much regeneration, either.
- Most of their ranch was cleared of oaks in the early 1960s.
- Vernal pools must be grazed for proper diversity. Grazing is intrinsic.

REEDS CREEK:

- They own two miles of Reeds Creek, and have noticed changes in the creek.
- The creek erodes down to the hardpan, and then it will erode through the hardpan, moving upstream.
- The creek has dropped at least 5 feet since they have been there.
- They have done some fencing, this improves habitat for black oaks and blackberries.
- All of the tributary gulches drop in erosion to meet the creek.
- The creek is dry upstream, but recharges through their area.
- They have an artesian well and some springs.

WILDLIFE:

- Wild pigs are out of control. At one time it seemed they were wiped out 10-15 years ago, but suddenly there was a huge population explosion.
- The pigs are tearing up the hillsides like never before.
- They have always had deer on their ranch.
- The deer follow the green pastures.
- A lot of turkeys around. Some quail.
- A decrease in squirrel populations.
- Also not seeing as many magpies and blue jays.
- They have six house cats controlling the rattlesnakes around the house, usually get four a year.
- They do not commercially hunt on ranch.
- Have never seen any mountain lions or bears.
- A lot of mountain lions just south of there reported by neighbors.
- In the 1960s there was an extreme drought and the water would recharge at night in the creek, but bone dry upstream.

GRAZING/RANGELAND:

- Used to be grazed primarily for sheep, now it is for cattle.
- Last grazed sheep in 1983, now only cattle.
- They used to have thousands of sheep that heavily grazed the ranch.
- Not much poison oak in sheep pastures, more poison oak on cattle pastures.
- They have pockets of perennial grasses all over their ranch, which they planted.
- Have rose and some sub-clovers.

(Interview No. 1 Continued)

- Range productivity has stayed about the same overall. Gets better with better management.

RESERVOIRS:

- Built in the 60's. They had 4 built total, two on each ranch they own. There were two more built in the 50s.
- Some designs are not good, lost one to erosion.
- Would like to fence and pipe out the water.
- Now doing more water troughs to distribute.
- Would like to put in a solar trough, but vandalism is a big problem.

FISH:

- Reeds Creek has a few minnows and maybe a sucker or two.

Largest threat to area:

1. Urbanization
2. Creekbed dropping
3. Land Clearing

Interviewee No. 2

Red Bank Creek Area

LAND USE:

- Land holding sizes have been decreasing.
- Very little change in public vs. private ownership. BLM has been trying to sell some of their property in western Tehama County and/or exchange it for other property.
- The property is in a Williamson Act contract and many large landowners would have to give up their property if it were not for the tax break involved in being a contract holder.
- Conservation easements are a good way to preserve agriculture and also be able to pass the land down to the next generation.
- We used to do some dryland farming; however with the use of a reservoir constructed in the 1970s we are able to do a limited amount of irrigated agriculture.
- The current gravity flow irrigation system, which can irrigate a maximum of 100 acres, currently irrigates 40 acres.
- Urban sprawl and land development are on the rise in western Tehama County.

FIRE AND FUELS:

- The goal of the Coordinated Resource Management Plan (CRMP), which governs 40,000 acres and 65 landowners, is to improve fire safety and wildlife habitat in the Elder Creek/Red Bank Creek Area. Tree and brush removal has been implemented in many areas, with plans in place to use goats for brush maintenance.

VEGETATION:

- Many landowners have clear-cut the oak woodlands for a profit before subdividing and selling the land. Other landowners have been doing selective cutting to help reduce fire hazards, control brush, improve grazing, and improve wildlife habitat.
- Star thistle on the property is kept under control by the sheep and goats. The other invasive plant in the area is Tamarisk.
- Riparian plant growth has increased over time.

GRAZING:

- Sheep are nearly absent from the county.
- Range Productivity – Better animal management has led to increased range productivity on our ranch.

WATER:

- There are a couple of stock ponds and one very large reservoir used for irrigation on the ranch.
- Water transfers out of the county should not be allowed.
- There are no fish in the creeks only in the reservoirs.
- Sheet erosion is probably the biggest contributor to sediment in the creeks.

Most Important Change: Urban sprawl.

Most Important Resource Change: Water use, capture, and quality.

Interviewee No. 3
Flournoy Area

LAND USE:

- Individual land holdings have decreased in size. One or two places may be getting bigger but everybody else is getting smaller.
- Would like to see property put into conservation easements remain available for agriculture.
- Dryland farming has decreased because the costs are too expensive and the return is too small. The Flournoy area used to have lots of dryland farming including dryland orchards. Some of the orchards were irrigated out of Thomes Creek.
- Urban sprawl is increasing.

FIRE AND FUELS:

- There are more prescribed burns now.
- The land in the mountains and upper foothills used to be burned every year. The trees were healthier and made better wood if they were exposed to fire. The fires killed insects and rattlesnakes.

VEGETATION:

- The oak trees are diseased and dying.
- The riparian corridor is overgrazed.

WILDLIFE:

- Pig populations are increasing; most pigs are west and north of Flournoy.
- Deer populations have decreased dramatically.
- Coyotes, bobcats, and mountain lions. There are a lot of predators that are diminishing the deer, quail, and jackrabbit populations.

GRAZING:

- Sheep numbers started declining rapidly in the 1930s and 1940s. As sheep numbers diminished, cattle grazing and farming took the place sheep had vacated.
- An open range policy is okay in the mountains, but not in the valley because there is too much traffic.
- Range productivity has diminished. When the family first came to the area, the bunch grasses and wild oats were tall enough to grab and wrap around the saddle horn while riding horseback.
- The ground is being overused, it needs more fertilizer or more rest. People are raising too many animals for what the land can support.

WATER:

- There used to be six diversions on Thomes Creek. There is water in Thomes Creek all year, but not enough to irrigate with.
- Gravel mining is okay if it is done correctly.
- There are fish in the streams. He has seen salmon in Thomes Creek downstream from Flournoy.

Most Important Change: Ease of transportation.

Other: Land was overgrazed 30 years after man first made contact with the area and has remained overgrazed since then.

Interviewee No. 4
Proberta Area, Reeds Creek

LAND USE:

- Individual land holdings have decreased in size.
- Williamson Act-Contract holders that believe the Williamson Act is good for preserving agricultural ventures and open space.
- Dryland farming has decreased and irrigated crops have increased.
- Almond orchards and rice fields have increased in the area.
- Drip irrigation systems are a good system for irrigated agricultural ventures.
- Urban sprawl is increasing.

FIRE AND FUELS:

- The interviewees have noticed more frequent controlled burns in the last few years.
- Landowners are starting to clean brush up a little bit.

VEGETATION:

- Clear-cutting oak trees has become very popular for firewood sales. Clear-cutting is not good for the terrain of western Tehama County.
- Star Thistle and Medusahead are the invasive plants they deal with on their pastures and rangeland.
- Reeds Creek is choked with willows and arundo.

WILDLIFE:

- Starting to see more pigs in the Lowry/Johnson Road area.
- The wild turkey numbers have increased.
- Deer populations have increased.
- There are a lot of coyotes in the valley but not as many to the west.
- Jackrabbit numbers have decreased but squirrel numbers have increased.

GRAZING:

- Sheep numbers have declined over time.
- Rangelands-absentee owners own the nicest rangeland in western Tehama County.
- An open range policy is good for ranchers, but it would create too much county liability.
- Range productivity depends on the operator. Larger landholdings tend to not be overgrazed. Overgrazing is more common on the smaller landholdings.
- They wait until the grass is two inches high or December 1st to bring cattle back to winter pasture.
- They take the livestock to summer range by May 15th.

WATER:

- They have a tailwater pond on the valley piece and no reservoirs on the rangeland.
- They pump water from the ground and use flood irrigation on the valley piece. There is no irrigation on the range piece.
- There has been an increase in domestic water use in western Tehama County. Agricultural water has possibly stayed the same, with a slight increase from an increase in rice production.
- Water should not be transferred out of the county. The Proberta Water District has already sold water to be transferred out of the county for a million dollars.
- Gravel mining is okay as long as the area is returned to as natural a state as possible when the mining activities are ended. Grass does not grow where the gravel operations are located anyway.
- Fisheries-Reeds Creek and Pine Creek both dry up so there are no fish in either one of those streams. There are sucker fish, bass, and catfish in the tailwater pond.
- Water quality has diminished as the amount of roads, houses, and ditches has increased. Water quantity has decreased. The artesian well located on the range piece used to run all year long, but it currently dries up from the month of June to October. There used to be a lot of springs on the west side of Tehama County.
- Most erosion is a natural occurrence in the kind of terrain found in western Tehama County. The increase of impermeable surfaces, including housing rooftops and roads, has led to higher runoff volumes. The higher runoff volumes contribute to the formation of gullies and increased streambank erosion. Recreational vehicle tracks have also contributed to gully and sheet erosion.

(Interview No. 4 Continued)

Most Important Change: Urban sprawl.

Most Important Resource Concerns: Preservation of open space and the oak woodlands. More stringent restrictions on land development should be implemented.

Interviewee No. 5

LAND USE:

- Land holding sizes have gone down.
- Would like to see the Williamson Act held up.
- Positive with public land ownership as long as it is properly managed.
- Conservation easements probably a good thing.
- In 1980s, all their neighbors were farmers. Now, it's pretty well gone.
- Collective bargaining.
- Block commodities together.
- Farms not producing enough to keep people on farms.

VEGETATION:

- Control weeds in barley.
- Wild oats and Italian Rye – grass in barley spray to get it out.
- Oaks are changing, dying, not sure why.
- Planting trees on ranch to promote wildlife, shade for cattle, etc...
- In the 1980s, some ranchers bought a ranch, clear-cut the oaks and sold firewood.
- Riparian changes – more vegetation now than he remembers. Used to be a sheep ranch and sheep hammered the creeks, now vegetation is coming back.

WILDLIFE:

- Wild pigs love his grain – Asiatic boars (Ruskies) crossed with Hampshires.
- Come back in the spring, rototill all over in the grain and make a mess.
- Mountain lions drove him out of the sheep business, used to lose one a night for a while.
- Deer, dramatic decrease in populations. Barely any around. Something is going on ... abortion? Brucellosis? Used to see at least 6-10 at all times, now none.
- Rattlesnakes are going way up. In the 80s, there were very few. Last year they killed a lot by the house, a lot of little ones. Coming down the creek.... Maybe due to more creek riparian vegetation, more cover.

GRAZING:

- His barley stubble makes good cattle feed.
- In favor of open range.
- Range production is going down. Pastures not growing like they used to. Even grain not as productive as it used to. Planting perla grass to improve range conditions.
- The area grows good sudan grass, and he plants that during the summer.
- No vernal pools out there.

FISHERIES:

- Thomas creek used to have salmon.
- The creek by the house used to have suckers in the 80s, haven't seen them since.

WATER:

- Water levels going down. Well pumped 40 gpm in the 80s, now down to 15 gpm.
- Weird stuff going on with the aquifer.
- In 1995, they got 54" of rain at the ranch.
- Springs are variable, wet year and they dry up. Dry year and they run.
- People like the Metropolitan Water District drying up the country. Put in wells, pump out the water and it dries out the country.
- Flournoy school area has some serious issues. The people building houses out there better get used to bottled water.

Most Important Resource Concern: Low prices to farmers, leads to farmers selling land, subdividing... a snowball effect.

Interviewee No. 6

Red Bank Creek Area

LAND USE:

- Public lands not managed properly.
- Private land use can be wonderful or hideous. Best is an enlightened private user.
- Conservation easements generally a valuable tool with many long-reaching effects.
- Irrigated agriculture decrease. Increase in energy costs takes out the irrigation.
- Dryland farming way down.
- Urban sprawl a huge threat.

FIRE AND FUELS:

- Sunflower CRMP – slight increase in prescribed burns.
- Increase in fuels management for their area.

VEGETATION:

- Oak harvesting a huge threat to the area.
- Properties raped for their wood. Some neighbors in their area clear-cut 8,000 acres for firewood.
- Some oak is regenerating, especially on their ranch, but in other places in county it is not.
- Yellow starthistle, saltcedar. Not big issues, symptom of problem, alter grazing to help control noxious weeds.
- Increase in adobe lilies and diamorphic snapdragons.
- Riparian – dramatic increase. Positive effects.
- Creek used to go dry by 4th of July. Now it goes year-round for nearly 1 mile on their ranch.
- Sedges, rushes, mulefat, cottonwoods. All about grazing management.

WILDLIFE:

- Wild pigs
- Not a long-term program... they will eradicate themselves over time.
- Mountain lions are an expression of the landscape.
- Have 2 resident bears on property.
- Porcupines have gone away.
- Badgers, gone.
- Coyotes, gone.
- Buzzards, down.
- Rattlesnakes, same.
- Ground squirrel, down.
- Skunks, way down.

GRAZING:

- Bands pretty well gone
- Cattle populations have gone down, too.

RANGELAND:

- Annual Mediterranean climate should not be grazed all at once.
- Runs cattle on their ranch year-round.
- Vernal pools need to be grazed.

Most Important Resource Concerns:

1. Shift from owner/producers to investment owners with renters... they don't care about the property, just run it into the ground.
2. Urbanization
3. Overall decline in productivity, decrease in wildlife, increased erosion.

Interviewee No. 7

Historic Tehama County Resident/west of Red Bluff

LAND USE:

- Threat to ranches is when they fall apart and nobody owns it.
- Family ranches go down the chain until it hits a spot where the family isn't interested in it anymore.
- Then it sells, and it goes to a developer because the land value is too high now. This happens more on the cattle ground than the farm ground.
- Conservation easements are not good. They have strings attached. They own the ground, and you can only do certain things on the ranch.
- Impossible to have two different groups own the land. They will kick off the cattle any day to help an endangered species.
- What happens when TNC dries up like everything did during the depression. During the 20s and 30s, rich people committed suicide because things were so bad. What happens if it happens again?

VEGETATION:

- Oaks are cut and there is no problem with regeneration.
- They always grow back. Their ranch was cut twice for wood. Ranch was cut back hard during the depression. They had probably 85% re-growth of the oaks afterward.
- Have medusahead and starthistle. No sheep anymore to keep the starthistle back.
- Vegetation in the streams have gone up. They used to clear the streams with dozers to keep them flowing well. Worked for the county for 30 years clearing out streams.

WILDLIFE:

- Wild hogs have stayed the same overall. There were always hogs around; that's how people lived back then. Wildlife really responded to the installation of reservoirs in the area during the 40s and 50s. Before that, there wasn't as much.
- Now there are a lot of poachers.
- A lot of mountain lions, lost three calves last week.

AGRICULTURE:

- Used to irrigate their property. Had 10 acres, and sprinkled it. Eventually cost too much to maintain.
- Agriculture is doomed in the county. Decrease in irrigated ground. Not enough water to go around. It's a big threat for the county. Can't make it in farming anymore.
- Prunes used to be a big crop, but not as much anymore. Ripping out fields.
- Water is the biggest issue.
- No dryland farming anymore because expenses have risen and the price you get for the barley has stayed the same.

GRAZING:

- Maybe staying the same with rangeland AUMS, maybe increasing, though.
- Go out and graze a Forest Service permit on the 1st of June near Lassen.
- Has some other range and then back down by the 1st of November.
- Sheep were good at keeping the starthistle down. No more sheep grazing.

Biggest threat to area: Urbanization.

**Interviewee No. 8
Elder Creek Area**

LAND USE:

- Individual land holdings have decreased in size. Many large holdings are being clear-cut to harvest oak firewood, then divided into 160-acre parcels. The parcels are bought by people that do not have the financial standing to take care of a property or by absentee landowners. Often these vacant lots become homes for low income squatters.
- The Ranch and 62 of the neighbors have a great working relationship with government agencies and publicly held lands. The group has created a Coordinated Resource Management Plan with several government agencies and managers of two publicly held lands with the goal of creating fire safety and wildlife habitat.
- Williamson Act is a great program to be used to save agricultural lands, specifically large land holdings.
- Private Lands entering in Conservation Easements is a great concept to help marginal operations retain the land without selling it to a developer.
- Dryland farming used to be very profitable and there is no irrigated farming in the area.

FIRE AND FUELS MANAGEMENT:

- The Ranch has been using the ball and chain method for brush reduction in conjunction with selective oak tree removal. The Burrows ranch intends to use goats for brush maintenance in the future.

VEGETATION:

- Brush has severely encroached on the oak woodlands from decades of fire suppression efforts. The last rancher out of the foothills used to set fire to the landscape thereby reducing the fuel load and rejuvenating grasslands.
- Starthistle and Medusahead have come to the Ranch; however the Ranch uses rotational grazing to minimize the recurrent growth and spread of the noxious plants with descent control. There is a possibility that the noxious plant problem would not be as severe if the land was grazed on a rotational basis for the entire year instead of allowing the noxious plants to grow ungrazed all summer long.
- The riparian corridor on the Ranch is improving because the livestock are not allowed to camp in the riparian corridors.

WILDLIFE:

- The wild pig herds have increased in size.
- The wild turkey numbers have increased.
- Deer populations have decreased due to:
 1. Urbanization, increased road kills and higher numbers of trespassers and poachers.
 2. Increased predators – mountain lion and bear populations are on the rise.
 3. Disease – Blue Tongue
 4. High population of does, need an occasional doe hunt.

GRAZING:

- Sheep and goat numbers have declined over time; however sheep and goats are making a small comeback. Cattle numbers have increased as sheep numbers have decreased.
- Most large landowners are pushing for the county to become an open range county due to the increased costs to fence off county roads.
- Overall the range productivity in western Tehama County has declined dramatically. There are increased amounts of grasses and forbs with poor nutrient contents or low palatability. One belief is that range productivity would be improved if landowners utilized the ground all year with a rotational grazing program.

WATER:

- The ranch reservoirs are used for stock water and fishing. Reservoirs were built in the 1950s with most built in the last 15 years. Permitting and regulatory fees (taxes) limit the amount of new impoundments.
- There has been an increase in domestic water use in both the valley floor and the western foothills of Tehama County. Agricultural water use has also increased on the valley floor; however agricultural use of water has decreased in the foothills.
- Water should not be transferred out of the county.
- In order to maintain roads and with continued urbanization of the area, gravel has to come from someplace. If the mining is done in accordance with regulations and is a well-managed operation, continued gravel mining is okay and a necessity.

(Interview No. 8 Continued)

- Fisheries on individual land holdings are better because fish populations are managed in water impoundments. The fisheries in the streams are worse. The fish most often found in the streams are trout. Trout used to be planted from 1950 to approximately 1985 in the local streams. Planned grazing on the Ranch has improved the trout populations in the streams running through the ranch.
- Water quality has not changed much over time, however water quantity is decreasing. The climate is changing, as both rainfall and snowfall have decreased. The Ranch used to have to winter feed every other year and have not had to winter feed for 20 years.
- Erosion overall in western Tehama County has increased due to poor management practices. Overgrazing has led to a decrease in perennial grasses and forbs and an increase in annual grasses and forbs. The Burrows Ranch does not allow cow camping on riparian corridors and the animals are restricted completely in the spring and early fall.

Most Important Change: Small parcels ranging in size from 5 to 160 acres have had the biggest impact on the watershed.

1. Dust and nitrate contamination and general people pollution works against a healthy watershed.
2. Stewards of the land are being driven out due to increased land values, increased taxes, increased insurance, and increased operating taxes.

Most Important Resource Concerns:

1. Maintain largest land units possible under one manager.
2. Reduce brush encroachment.
3. Promote perennial grasses.
4. Promote planned grazing.
5. Promote agri-tourism.

Fundamental Truth:

In the last 1000 years 21 civilizations have collapsed. The civilizations collapsed because the watersheds supporting them were abused. The indicators of eventual collapse in order of occurrence are:

1. Wildlife diminishes.
2. Small towns disappear.
3. Big cities collapse.

Interviewee No. 9

LAND USE:

- Watershed area protects very little. If it weren't for that, ranches would be gone already.
- Illegal parcels created with lot line adjustments, etc...
- Ordinance – open range now closed, rural people fence their own property to keep cows out.
- County falls under requirements, increase county costs, taxpayers probably not for it.
- Public ownership is better than a subdivision.
- Better to be in private hands than the government, though.
- Large land holdings are getting smaller through illegal parcel divisions. Lot line adjustments and four by four splits are the most common methods.
- A lot of the smaller parcels are owned by absentee land owners or retired people.
- Against taking land out of private ownership unless it will prevent the subdivision of lands.
- 95% of the rural land in Tehama County is in a Williamson Act contract.
- Dryland farming has diminished as operating costs have increased.
- Dryland farming – all economics, why not much left.
- Detrimental to grasslands, worst thing you could do is to lose the humus layer topsoil.
- Sheep caused trails on hills, overgrazed it.
- Economics and predators. Need to balance nature.

FIRE AND FUELS:

- There should be more controlled burns.
- In the 1960s the popular way to control brush encroachment was to bulldoze or kill trees and come in 3 years later and burn the area. Our family would also set fire to a different section of the upper foothills when they came down out of the hills in the fall, this would help to clear brush and rejuvenate grasslands.

VEGETATION:

- Blue Oaks and Valley Oaks are not rejuvenating. Overgrazing and hog rootings may be the cause of the problem.
- Medusahead and starthistle continue to increase. In the 1970s many people planted arundo for streambank stabilization, now it is an invasive plant that is spreading out of control. Biological control of starthistle (beetles) works until there is nothing left for the beetles to eat.
- Vegetation has decreased along the streams.
- Weeds – starthistle, medusahead, and lupin, worst weeds.
- Wild oats not as good anymore.
- Overgrazing is the problem.
- Drastic reduction in feed. Key is to get them out 1st of June.
- Put cattle on range 3 weeks after 100% germination. Usually Nov 15-25. Get off 1st of May, earlier the better. Many people go April 25-May 5. Most go May 5-June 1.
- In the 1960s, there were major clear-cuts of oaks for firewood. On average, there were maybe 20,000 acres a summer. This increased the rangeland for cattle.
- Need more rangeland fires to control medusa and starthistle.
- Biocontrol – beetle on starthistle three years ago and it worked very well.
- Banks hurting from erosion. The water gushes out too fast, with nothing to hold it back. More trees are needed on the banks.
- Arundo is not that bad, holds back banks. Less plant life from too much erosion.
- Dams – check into Red Bank dam site. Doesn't impact people. Stock ponds in area were created primarily in the 1950s.
- Scorched Earth Policy – graze every last blade of grass on the property... resembling a devastating fire had just gone through the ranch. Too many ranchers do it.

WILDLIFE:

- Coyotes and other predators were affecting the deer. Eating fawns.
- Deer populations drastically down. Mountain lions take down mature bucks and does.
- Reservoirs – bullfrog situation, not big ones anymore.
- Rattlesnakes are down.
- King snakes down; bull snakes fine.
- Field mice okay. Bald eagles doing fine.
- Possums down.
- Crows a problem.
- Magpies a problem.
- Blue Jay populations are down.

(Interview No. 9 Continued)

- Hogs – came from Owens ranch. Not feral pigs, Hampshire breeds, few wild boars introduced. Was a commercial operation that went awry, put them on the dry farmed fields.

GRAZING:

- Sheep numbers have declined due to the economics of the industry. Sheep and cattle have both contributed to overgrazed rangeland.
- An open range policy is going to increase county costs.
- 60% of rangeland is overgrazed. Wild Oats have diminished due to overgrazing. One theory is that dryland farming has destroyed the fragile humus layer so vital to grassland health.
- A good rule-of-thumb for grazing management is to take livestock to winter grazing three weeks after 100% germination of grass seed (around mid-November). Take livestock back to summer grazing ground as early as possible (end of April, start of May). Most people take livestock to summer grazing as late as the end of May.

WATER:

- Water impoundments, built from the 1940s through to the 1960s, are strictly used for stock water.
- Surface water transfers to the south would be okay.
- Gravel mining adds to erosion in the streams. Gravel mining can continue but upstream effects need to be assessed and addressed.
- Thomes Creek and Elder Creek have had salmon; the only fish in Reeds Creek are sucker fish.

Most Important Change: Overgrazing has created an erosion problem and diminished water retention situation. When the land is overgrazed there is not enough residual matter to capture and retain water to percolate into the aquifers. Additionally, increased water runoff leads to increased erosion.

Most Important Resource Concern: Rangeland productivity.

Biggest issue: Overgrazing. Big factor with increased erosion. Not enough residues in spring. Maybe 60% of ranches are abused. Getting a little better. Absentee owners don't run their ranches as hard. Mid/early 1980s, ranches hit very hard.

Gravel mining: Adds to erosion. Increased velocity. It's a good practice, but needs to be selective and address upstream effects. Needs to be done right.

Interviewee No. 10
Landowner south of Red Bluff

HISTORY:

- Tehama County was established in farm districts, Flounoy, Paskenta, Henleyville...
- 1870s – first major development in the county.
- Sir Ranches. First grain bulk storage in the county.
- Clover seed, alfalfa seed, recycled all things.
- Clover threshings were used as feed.
- Toss a match on the range when they leave. Improves range.
- Good dates to turn cows on summer range: May 10th
- Old drives, used to go 10 miles a day during cattle drive.
- Sheep drink ½ gallon water per day, so they are more practical for lower valley without water.
- Over time, water is developed, so not as much needed for sheep.
- Sheep get shorn twice, once in September and once in April.
- No fences in county until around the turn of century.
- Drive the hogs by sewing eyes shut, and somebody leading saying "oink!"

LAND USE:

- All of the small communities of western Tehama County are remnants of former farming districts formed in relation to the Grange Association and the Farm Bureau.
- Dryland farming controlled medusahead and increased erosion hazards.
- Urbanization has decreased the amount of land farmed and has altered land values.
- Urbanization, can't make a go of it anymore... Land costs too much.
- 1970s probably last time you could actually make a go of it.
- Williamson Act is good for now, but the economics forces development.
- If agriculture was more profitable, you wouldn't have the development pressure.

FIRE AND FUELS MANAGEMENT:

- Fuels Management – historically the last man out of the mountains and foothills in the fall would set fire to a different section of the landscape every year to clear brush and rejuvenate grasslands.
- Fuels Management – some landowners would allow livestock to graze around homes as a way of controlling vegetative fire hazards.

VEGETATION:

- Farming kept the medusa out. Either farm it or burn it.
- Lot of erosion with the old dryland farming.

WILDLIFE:

- Wild pigs are becoming a nuisance, destroying fencing and drip irrigation systems. Raise hell, tear up fences, and chew up drip line in new orchards, poachers going out after them with guns.
- Mountain lion and bobcat populations have both increased.
- Coyotes a number one predator to sheep.
- Coyotes and mountain lions decimate deer populations.

GRAZING:

- Sheep were used on dryland farming fields to clear grain stubble. Sudan grass and clover were often planted in the grain fields to encourage the sheep to graze the fields.
- Historically, during the winter, the sheep would graze in the valley and the cattle would graze in the foothills, this arrangement was based on the water needs of the two species. In the summer everything was moved to the mountains for grazing and returned to the valley in the fall.
- Some landowners would run turkeys in the fields after the sheep had vacated them to control bugs.

WATER:

- The property has reservoirs for stock water that were built in the 1940s.
- Some earthquakes have taken out springs, and some springs have started from earthquakes.

Interviewee No. 11
Landowner in Flounoy Area

LAND USE:

- Existing ranches are staying the same size.
- Increasing amounts of leapfrog developments. Recent subdivision in Flounoy has been poorly planned - area aquifer is not large enough to support any additional draw on the supply.
- Large land holdings are starting to be split up.
- Non-profit conservation easements take property out of the tax base.
- Williamson Act is a good deal for agriculturalist gives them a tax break and keeps land from being developed.
- Dryland farming and rotational cropping has decreased over time. Depressed grain prices and rising operating costs have caused the decline in dryland farming practices. Dryland farming on their ranch went out 20-30 years ago. Costs came up and the price of grain stayed the same. Not economical anymore.
- Sheep populations have gone down drastically. They once had 1200 ewes and then dropped it down to about 100, they have none today.
- Reasons: Predators, lack of extra range, depressed prices. Would rather run sheep, but predators are too bad. Coyote worst, then mountain lion.
- His family used to drive stock over the mountains to the Eel River country.
- Range productivity – sub clover plantings have helped out a lot. Thistle reduces it, so he's maybe even. Bur clover was present in the area, but alfalfa weevils knocked that back 30 years ago and wiped it out. Bur clover only grows on good ground. Sub clover only on the red bad ground. Medusahead has increased over time. Keeps stock on ranch year round. Used to go to irrigated pasture, but its too expensive.
- Flounoy Ranch bought by developer, has riparian wildlife corridor easement.
- Does not foresee much expansion on the west side for The Nature Conservancy or other groups. Not too fond of it due to tax base, land off tax roll. Government has too much land already.
- Williamson Act is on the right track.
- Neutral to conservation easements.
- Open grazing – better for rancher. Open range keeps liability off rancher when cow gets hit. His ranch is set up that he couldn't fence off the road very well, without leaving some very funky triangular pastures without water.

FIRE AND FUELS:

- Frequencies of prescribed burns have stayed at the same rate for some time.

VEGETATION:

- Historically trees have been cleared from the property to increase the amount of rangeland available for feed.
- Invasive plants found on the property include: Italian Thistle, Medusahead, and Bull Thistle.
- Thistle control methods have included both herbicidal sprays and weevil biological control.
- Riparian corridor vegetation has stayed the same along the smaller creeks and increased along the larger creeks.

WILDLIFE:

- Few wild pigs found on their property, the wild pig population increases the further west you go. During drier years, the pigs move east out of the western foothills in search of water. Wild pigs tend to tear up the ground and water gap fences.
- Deer populations have decreased from higher predator populations.
- Coyote and Mountain Lion populations have increased.

GRAZING:

- Sheep numbers have decreased dramatically in the last 20 years. There is less land available to lease for grazing ground and predators (coyotes) have increased.
- Cattle numbers have increased as the sheep populations have decreased.
- Ranchers will have less liability. Impractical fencing could be removed.
- Family has planted clover to increase range use. Weed species have increased (Medusahead). Dryland farming used to moderate weed species and rejuvenate clover species.
- Historically the family used to summer livestock in the eastern mountains until around 1940. From that time to the very recent past the animals were grazed on rented,

irrigated pastures.

(Interview No. 11 Continued)

WATER:

- Not much water from Henleyville to Flournoy.
- Limited water. Crane orchards put in some walnuts.
- At Thomas Creek the increase of riparian vegetation has led to too much vegetation, causing blockage in the creek and then the creek goes sideways and erodes.
- Six ponds on ranch. Built during 40s and 50s. One has fish because water is in year-round.
- Canal water is getting too expensive.
- Impoundments – the property has five major reservoirs and one smaller one, all constructed in the 1940s and 1950s. Impoundments strictly used for livestock water. Now must pay a \$100.00 fee for water rights per impoundment.
- Gravel mining in the Flournoy area has decreased over time.
- Fish can be found in the streams in the mountains but not in the foothills.
- Erosion is a natural occurrence in the western Tehama County landscape.

Most Important Change: Urban sprawl has had the biggest impact on the watershed. Nonsensical isolated housing developments create an unsupportable draw on the watershed resources. Land use, urban sprawl, and development.

Most Important Resource Concern: Management of future housing developments to infill undeveloped areas between those areas of higher population densities.

**Interviewee No. 12
Proberta Area**

LAND USE:

- Land is being subdivided in the Red Bank area.
- The family has a good working relationship with government agencies.
- Conservation easements are okay as long as the land can be utilized for agricultural endeavors.
- Dryland farming has decreased and irrigated crops have increased.
- Urban sprawl is increasing.
- Much of the red land has been ripped and planted to Eucalyptus groves. Price of wood is down now, so it's pretty worthless.
- Used to gather cattle in the Rancho Tehama area 40 years ago. The rancher retired and sold his 4,000 acres for \$100/acre. It was developed and now has 3,500 people.
- Proberta Water District gets water from Sacramento River. Used to be \$18/acre foot now water is \$30/acre foot.
- In favor of working with non-profit groups. Work with the U.S. Fish & Wildlife Service and TNC. Have a good relationship with the groups.
- Williamson Act is not a very well written document.
- Dryland farming – can't afford it anymore. Price of grain has stayed the same for the last 50 years.

FIRE AND FUELS:

- Not enough range fires. Starting to do controlled burns a little more now. Still nowhere near enough prescribed burns.
- The Proberta Volunteer Fire Department has been shut down.
- Fire hazards are increasing as the population increases.

VEGETATION:

- The family used to poison trees and clear-cut trees to increase rangeland. Oak firewood sales are often used to subsidize bad years in the cattle industry.
- Starthistle and Klamath weed are the invasive plants the family deals with. They have used biological controls to eliminate the Klamath Weed. The streams and reservoirs are being invaded with *Hydrilla* as well.
- Riparian corridors have increasing amount of plant life leading to more flooding.
- Too much oak clear-cutting.
- They had Klamath weed, and the biocontrol agent wiped it out. They have some starthistle, but know how to graze it at the right times and its not as bad as it was.
- Too much vegetation now. CDF used to clear Oat Creek. There is an aquatic weed problem in Coyote Creek, *Hydrilla*.

WILDLIFE:

- Pig populations have increased.
- The wild turkey numbers have increased.
- Deer populations have decreased in numbers, except for along the river.
- The coyote populations have increased tremendously.
- Mountain lions are a problem and they lose about one head of cattle per year to mountain lion predation.
- Jackrabbit, pheasant, and rattlesnake numbers have decreased.
- Not too many pigs on the place. Pigs in the Eucalyptus systems tear up the drip irrigation lines. They sometimes follow the creek past Flores Avenue. Pig hunts are very popular with the local hunters.
- Populations are way down, especially at their spot down along the river. Not enough habitat, too many orchards.
- Pheasants are in decline due to increased predation.
- Rattlesnakes decreased. Some bull snakes in fields. King snakes around the house.
- Voles controlled by egrets, cranes, herons.

GRAZING:

- Sheep numbers have declined over time and the cattlemen have taken over where the sheep have left off. Economy brought the major decline of that industry. Cattle took over sheep ranges. Used to be huge sheep drives, over two miles long. There were a lot of sheep in the Flournoy area.
- An open range policy is good for ranchers.
- Range productivity has stayed about the same. Urban sprawl has diminished the

amount of available rangelands.

(Interview No. 12 Continued)

- They move livestock to the higher elevations in June and return to the lower elevations in November.

GRAVEL MINING:

- It is necessary. Just need to do it right.
- A lot in Red Bank, some in Oat Creek.
- Restrictions by Fish and Game make it compatible with wildlife.

FISHERIES:

- Catfish in the reservoirs.
- Used to fish in the Sacramento River for steelhead, their populations are down.
- Four years ago, there was salmon spawning in Coyote Creek.

WATER QUALITY:

- Better quality. The Sacramento River has improved a lot, used to smell the river at the house, but you can't anymore.

EROSION:

- Major bank conditions have remained largely the same since they can remember. It has always been that way... not a new thing.

WATER:

- They have reservoirs for stock water in the higher elevations and tail water catch ponds on the lower elevation cropland.
- The Ohm family use flood irrigation to irrigate the crop land.
- The Ohm family have some vernal pools; the areas of vernal pools are not managed any differently than those areas without the vernal pools.
- There has been an increase in domestic water use in western Tehama County. Agricultural water has possibly stayed the same, with a slight increase from an increase in rice production.
- The Proberta Water District has already sold water to be transferred out of the county for a million dollars.
- Gravel mining is okay if it is done responsibly. Gravel mining is actually good at keeping the choking vegetation out of the streams.
- Fisheries – Steelhead in the river has diminished and the salmon populations are increasing.
- Water Quality – water quality has improved as people have become more conscientious about what goes into the water system.
- Erosion – The Ohm family used to fill in gullies and plant grass seed to increase rangeland. Most sediment found in the creek is from bank erosion.

Most Important Change: Levelled land and irrigated pastures have had the biggest impact on the watershed.