

ISSUES AND CONCERNS AS RELATED TO EXISTING CONDITIONS

Introduction

The stakeholders who participated in the scoping process, through six four hour meetings, identified over 100 issues that were of concern to landowners, educators, conservationists, farmers, foresters, recreationists, and agency representatives. These issues were categorized into fourteen groups, and from these, the Watershed Advisory Committee (WAC) defined the top ten issues and concerns for the watershed. *Please note that the numbers in parentheses after each issue/concern correspond to the order in which issues were raised. They are in no way intended to indicate rank or priority.* These concerns were further refined for consensus on exact wording. The top ten issues are as follows:

1. Increased population over the last ten years in the canyon and surrounding areas, as well as future growth, has increased recreational pressures in the watershed without an increased infrastructure to accommodate the use. (Note: infrastructure has not kept up with the increase in population, i.e. the number of wardens.)
2. The decline of the fisheries mainly due to water diversions and lack of screening has resulted in Endangered Species Candidate listing for the spring run Chinook salmon leading to restrictions on Sport fishing and elimination of salmon and trout fishing, and could lead to further watershed-wide restrictions for multiple uses: agriculture, timber management, recreation, urban development, and property rights.
3. The current fuel load in the watershed is at an unacceptable level due to natural response and man-made interventions.
4. Inadequate timber management regulations and practices have potential impact on water quality.
5. Improper road construction, design and maintenance intercepts and redirects runoff, causing erosion and road blowouts and may damage the watershed.
6. Ground water recharge capabilities need to be considered, and recharge areas are not identified and may need increased protection.
7. The quantity and quality of domestic water supplies need to be understood and protected.
8. Urban run-off, due to increased urbanization, contributes to water quality degradation.
9. Flooding in the Butte Creek watershed is natural and unavoidable, therefore any past and future building (to include roads, bridges, levees, etc. as well as structures) on the floodplain must be compatible with flooding in an environmentally conscious and sustainable manner.
10. Need to educate on appropriate management practices for the above 9 items.

By category, the issues sort out a very similar but broader perspective of the concerns.

1. Flooding
2. Dams
3. Woody Debris
4. Recreation
5. Creeks and Riparian Zones

6. Urban Issues
7. Mining
8. Fire
9. Agriculture
10. Hydroelectric Production
11. Fish and /Wildlife
12. Roads
13. Water Quality
14. Review Items

A general discussion of issues other than the top ten follows an analysis of these fourteen categories. There are many significant concerns that for one reason or another, such as wording, did not filter to the top of the list in the process of prioritizing. These issues are, none the less, important and must be considered, refined, and prioritized for future reference. Also, the list should be considered open ended to include new issues as they may occur or to delete problems that may have been resolved. Conditions change, episodic events happen: this means that management of the watershed will be constantly evolving. Annual review of issues seems prudent considering the diversity and complexity of the watershed. Adaptive management techniques and policy implementation measures based on these issues will be included in the management strategy.

In describing issues, the current status of activities related to these concerns is discussed. In some cases, related issues are included to ensure clarity in the analysis of the situation for the benefit of stakeholders and watershed advisory committee members. Finally, all of the initial issues and concerns will be considered in developing a strategy for management of the watershed. They are here discussed by category, and in some cases, by specific issues. There is no attempt to prioritize issues beyond the initial top ten list, but as these are addressed, other issues as they appear (from the WAC or from agencies) will be incorporated into this document in annual revisions.

Top Ten Issues and Concerns

1. Increased population over the last ten years in the canyon and surrounding areas, as well as future growth, has increased recreational pressures in the watershed without an increased infrastructure to accommodate the use. (Note: infrastructure has not kept up with the increase in population, i.e. the number of wardens, parking availability.)

This issue has clearly been a concern for many years by residents, resource agencies, and law enforcement agencies. The focus of much of the concern is the lower canyon area frequented by tubers, swimmers, kayakers, bicyclists, auto tourists, fishers (prior to the closure of this section to fishing), and other recreationists. The only developed public sites in the canyon are the Honey Run Covered Bridge and the Centerville School and Museum. There are many undeveloped creek access areas, some private and some public, but with no definition of boundaries between private and public land. This has led to degradation of these undeveloped areas and numerous conflicts with private property owners. The increase of population in the canyon, Paradise, and the Chico urban areas has exacerbated the problems. Restrictions on recreation in Bidwell Park in Chico and on the Sacramento River, specifically parking and alcohol regulations, have also contributed to increased pressure on Butte Creek.

Recreational facilities are located throughout the watershed: Butte Meadows, Forks of the Butte, Paradise, and the valley refuges, but there is no comprehensive management or consideration for the impacts of unregulated recreation. Recent efforts by the Butte Creek Watershed Conservancy, Centerville Recreation and Historical Association, Honey Run Covered Bridge Association, Butte Creek Volunteer Fire Department, 4-H, and Paradise Parks and Recreation District have led to the formation of a Butte Creek Canyon Recreation Advisory Committee which has established priorities for addressing the problem. With support from outside funding sources, it is possible that several parcels of land can be purchased or leased to allow for the development of low use, low impact, and focused recreation areas. There is a general consensus among the Recreation

Advisory Committee that attracting more recreationists has a serious downside, i.e. traffic, trash, trespassing, etc. However, the need to manage for proper parking, trash facilities and public restrooms drives the effort.

2. The decline of the fisheries mainly due to water diversions and lack of screening has resulted in an Endangered Species Candidate listing for the Spring Run Chinook salmon leading to restrictions on sport fishing and elimination of salmon and trout fishing, and could lead to further watershed-wide restrictions for multiple uses: agriculture, timber management, recreation, urban development, and property rights.

One of the most debated issues in the stakeholder scoping process was the reason for the decline of the Butte Creek fishery. The biological opinions vary, but clearly indicate that a combination of factors has prompted the serious declines of the last three decades. Outside the watershed, the losses to predation during out migration, direct losses of juveniles at the State and Federal pumps in the south Delta, and commercial and sport fisheries catch are all significant factors. Before the State Water Project pumps became operational, salmon populations were more stable (see fishery section). These added losses in the system probably reduced the base population to a level where other perturbations have left anadromous fish unable to reproduce with sufficient surplus to overcome all the combined losses. Within the watershed boundaries, the most serious detriment identified for the juvenile salmon is the diversions of water for agriculture and wildlife refuges. Up until December of 1995, all diversions were unscreened and estimates of losses of 40% or more at each diversion indicate serious impacts. (Hill, 1996) Flow levels during the out migration have a significant effect, as in dry years most of the flow may be diverted out of the creek before it reaches the Sacramento River, which causes high water temperatures and concentration of potential contaminants. Flow agreements between CDFG and Parrott-Phelan Irrigation District will help the situation. The very recent Resource Renewal Institute sale of a small water right for fish will help (check with Water Division, Butte County). In addition, CDFG has a bypass flow agreement with WCWD, Elma Ryan and Jim McAllister which is part of current legal actions to relocate WCWD's diversion to the Gorrill dam. CDFG has requested the Butte County Superior Court that this agreement be included in any order approving the relocation of said diversion. High flow years allow for many of the fish to be swept by the diversions and beyond harm's way within the watershed.

The diversions have a second significant impact on the salmon by blocking migration of adults on the way to cold holding waters in the canyon reach. This affects the adults three ways: physical damage from hitting the diversion structures and ladders; reduced flow and increased water temperature; and subjecting the fish to poachers following their migration upstream (Taylor, Bishop, personal communication, 1996). The reduced numbers of returning adults has led to the candidacy status for spring run under California Endangered Species Act. In addition, the National Marine Fisheries Service has issued orders to list spring run, fall run and late-fall run Chinook and steelhead trout as threatened in the Sacramento Valley mainstem and tributaries under the Federal Endangered Species Act. The impact of these listings have been softened by the dedicated efforts of a broad array of agencies and private interests, but only to the degree that populations remain stable in the short term and at least double in the long term. The many efforts in the Butte Creek watershed, dam removal, ladders for dams, screens for diversions, and significant planning efforts, demonstrate the interest and concern of the stakeholders to work together cooperatively to restore these populations.

3. The current fire fuel load is at an unacceptable level due to human-made interventions and natural responses to the interventions.

Throughout the Sierra Nevada and other mountains, fire has become an increasing concern. Fire was once a major ecological process in the Sierra Nevada that exerted profound influences on the evolution of Sierra ecosystems (Sierra Nevada Ecosystem Project, Vol. 1, Chapter 4, pg.70). Human settlement in fire prone areas and resource management philosophy has combined to establish a fire policy based on suppression. In areas where fire frequency is high, suppression has, in many cases, contributed to extensive growth of low level fuel plants such as manzanita, ceanothus, live oak, and several non-natives. Species composition of

many plant communities has been altered by a variety of natural and human caused interventions with little understanding of the relationships between species composition, fire frequency, and intensity. It is recognized that dense stands of fir and other species often have tremendous amounts of ladder fuel material that contribute to fire intensity. Fir is also a shallow rooted tree that tends to dry out the immediate rooting zone, inhibiting other volunteer species and producing a more fire prone microenvironment.

Reducing the fuel load is a relatively new fire management treatment because the high labor cost to remove understory fuels did not seem to be justified. However, evaluation of the costs of losses in the urbanized zones of the foothill scrub and mountain forest communities has demonstrated that prevention is becoming more cost effective. The efforts of this project to identify areas of high value, risk and danger, compile a GIS map, and make the information available to fire specialists throughout the watershed, will provide the basis for a guide to fuels reduction and fire management that will have tremendous value (see fire history and management chapter). This planning will address the findings of the Sierra Nevada Ecosystem Project report: (1) avoid further community development in flammable wildlands without mitigating fuel hazards, (2) establish defensible space/fuel reduction zones, buffering communities and certain wildlands, (3) identify other resource-threatening intolerable fuel hazards and prescribe mitigation treatment, (4) support a return of managed fire and prescribed wildfire, where practicable, to specific forest areas to provide the natural ecological functions believed necessary for ecosystem health and sustainability, and (5) advocate strong prevention and suppression capability. (Sierra Nevada Ecosystem Project Report Summary, page 17, 1997) This combination of management strategies is already being implemented under various programs. In particular, the Fire Safe Council, a statewide program with the California Department of Forestry, timber management plans with Lassen National Forest in the upper watershed, and private management programs are all seeking to find better strategies to manage fire in the ecosystem. The Butte Creek Watershed Project will facilitate the coordination of these programs.

4. Inadequate timber management regulations and practices have potential impact on water quality.

Many small land holdings in the upper watershed have been targeted by timber operators to harvest small blocks due, in part, to high lumber prices and restrictions on logging on public lands. The notable "three acre exemptions" in Butte County gave many operators incentive to market timber removal to small landowners who could make significant returns from just a couple of large trees. Previous lack of regulation for these small acreage's led to many less than desirable consequences, particularly erosion and sedimentation which affect water quality. This situation has changed, specifically within the Watershed Protection Zones above Paradise and Magalia reservoirs, (see issue #7) and other areas, due to tighter restrictions on these exemptions. There are now "three acre exemption conversions" to allow for changing land use from timber to other uses, presumably development. There is also a new state law, AB49, which allows for tree removal for fire protection.

The California Forest Practices Act was updated in 1973 and has broad authority over timber harvest operations. The enforcement of the regulations is difficult at best considering the vast expanses of timberlands over which it has jurisdiction. There is significant controversy related to its enforcement and it will continue to be suspect and subject to frequent challenge by various groups. Most private lands have less stringent regulations as compared to public land. The conversion of the forests from what they were when European settlers arrived has been dramatic. Late seral stage forests are all but gone and second and third growth forests are the rule. The forest are none the less highly productive in terms of total board feet, but changed in ways that, among other things, have contributed to degradation of water quality. Probably the most significant timber management practice affecting water quality is road building, which is discussed, in the next issue.

5. Improper road construction, design and maintenance, intercepts and redirects runoff, causing erosion and road blowouts and may damage the watershed.

Road building in the foothills and mountains has been determined to be a source of sediment pollution and regulation of this activity has been sketchy in most cases (Sierra Nevada Ecosystem Project Summary, page 8, 1997). Major lawsuits are being litigated on the North Coast of California over Total Maximum Daily Load allocation for sediment pollution as defined under the Clean Water Act of 1973. This has prompted serious efforts to identify and control sources of sediment, primarily roads. Major sediment reduction projects are currently in progress on the Trinity River, Redwood Creek, and the Garcia River. Almost no information is available on the contribution of unpaved roads to sedimentation in Butte Creek. There is estimated to be over 400 miles of unpaved roads in the upper watershed of Butte Creek and, with the exception of the main road system that is well designed and relatively stable, these roads could be the largest single contributor to sedimentation in the watershed.

As a result of this project, the first survey of unpaved forest roads will be completed this year under a CALFED grant. The survey will identify the soils and areas of highest potential erosion in three sub-watersheds, Bull, Varey, and Scotts John Creeks, and provide for recommendations to mitigate sedimentation. In other project areas, such as Redwood Creek on the coast and Grass Valley Creek on the Trinity River, various road maintenance treatments have been shown to greatly reduce erosion.

6. Recharge areas are not identified and may need increased protection.

The status of groundwater in the Butte Creek basin is among the most debated issues of concern to humans inside and outside the watershed. Water supply to surface water domestic systems, wells, surface water agriculture, and wildlife uses are all related to groundwater recharge throughout the watershed through the normal hydrologic cycle. Precipitation, springs, local creeks, subsurface connection to the foothills and mountains, applied water, canal losses and the Thermalito Afterbay all contribute to the recharge of the groundwater in the upper Butte Creek Basin. The California Department of Water Resources and the HCI groundwater model identify recharge areas. The focus of the DWR delineation and the model is the areas of recharge on the edge of the valley and in the basin proper. Significant recharge is likely in other areas, such as the foothills and through fractures from the mountain regions, but directly identifying the connections and the quantity is difficult. Human disturbances are increasingly affecting the hydrologic cycle by reducing infiltration of rain and snow into the soil and groundwater.

This reduction of infiltration happens in two significant ways. The first is the covering of the land surface with impermeable materials such as buildings and pavement. The second type of groundwater recharge reduction is the interception and concentration of overland surface flow that would normally infiltrate and percolate through permeable sections of the landscape. Various other human activities are affecting groundwater recharge by retaining, diverting, and spreading water over various surfaces for domestic, agriculture, and wildlife water systems. These activities collectively have a positive effect on groundwater recharge. Considering the value of water in the statewide arena, any activities that might reduce infiltration and recharge of the Butte Basin aquifer seems ill advised.

Recharge from over-irrigation of agricultural lands is highly variable across the basin. Soil types, methods and timing of application, and connection to groundwater table affect the quantity and quality of this recharge. For economic reasons, most irrigators strive to apply only the precise amounts of water necessary for plant growth plus evaporation, efficiency losses and occasionally, intentional leaching to remove built-up salts. Excess application has the potential to pollute the shallow groundwater aquifer with soluble nutrients and pesticides. Recharge potential in the immediate floodplain of the creek is not clearly quantified and the potential to increase recharge in these highly permeable areas with channel management techniques needs to be seriously considered.

7. The quantity and quality of domestic water supplies need to be understood and protected.

Available quantities of water for domestic supplies are fairly well understood and protection measures are utilized in most areas (see water chapters). The development of the ridge communities of Paradise, Magalia, Paradise Pines, and surrounding urban development has changed the nature of water use in this area from primarily agriculture to primarily urban. The existing systems were not designed to meet the needs of a rapidly growing urban area and are noticeably strained by the demand. An estimated 25-30% of the treated water for Paradise is lost to leaks in the system (Pers. com., Felte, 1995). Repairs are ongoing but are costly and slow. Other sources of water, such as wells, have been discussed by Paradise Irrigation District (PID) but pumping costs are high. Diversion of West Branch Feather River water passing through the Hendrick's canal purchased from PG&E has helped PID in dry years. Permanent access would require that PID negotiate a consumptive right and PG&E or future owners would have to be willing to reduce their power production. The future needs of Paradise and surrounding communities that depend on surface water are not great and could easily be accommodated with between two to five thousand acre/feet from the West Branch diversion. The vast majority of the rest of the watershed is dependent on well water for domestic use and quantities are generally adequate with varying quality (see water supply chapter). Wells are deeper and less dependable in the ridge and foothill areas. Valley wells are generally adequate with the exception of dry years and/or years of heavy pumping for agricultural use.

Ensuring water quality for domestic use is expensive, particularly for PID. The natural and human induced turbidity of the runoff in the watershed above Magalia and Paradise reservoirs forced the construction of a treatment plant in the late 1980's. Preventing further increases in sedimentation from development activity runoff is a very cost-effective measure for the areas above the reservoirs. Recent surveys by PID have indicated that increased protections are needed in the wet season and new development should be allowed only with proven erosion control measures. The Butte County Board of Supervisors approved updating the Watershed Protection Zone regulations above the Magalia and Paradise reservoirs and incorporating the regulations into the zoning ordinances in June 1998. It had previously been a resolution, which led to confusion and duplication of efforts. Protection of groundwater supplies from surface and infiltrated contaminants is monitored fairly well. Proposals have been submitted by the Butte County Water Division to increase and improve groundwater monitoring for contaminants.

8. Urban run-off due to increased urbanization contributes to water quality degradation.

The catchment area above the Paradise and Magalia reservoirs has been designated as a sensitive watershed in an effort to reduce pollution of the domestic water system from toxic pollutants and sediments being introduced from increasing urbanization of this area. In fact, this is a problem in several areas, not just Paradise. The south side of Chico is increasingly encroaching on Little Chico Creek, which enters Butte Creek via the bypass on the upper end and through Angel Slough which drains agricultural and refuge lands, Little Chico Creek and the Edgar Slough/Comanche Creek diversion canal. Much of Chico south of 20th Street is now being storm sewered to drain into this canal. A floodwater retention pond was constructed between East Park Avenue and Paseo Campeneros to mitigate this increase in runoff. Residents of Little Chico Creek at a meeting (June 18, 1998) who stated that flooding is an increasing problem recently discussed this problem in the lower parts of the watershed. It was also mentioned that the peak of the flow arrives in the lower creek much sooner that it did previously. This is characteristic of urbanization and the resulting covering of the land with impermeable surfaces. Little Butte Creek was especially hard hit in the 1997 flood and the paving of Paradise may be a contributing factor.

9. Flooding in the Butte Creek watershed is natural and unavoidable, therefore any past and future building (to include roads, bridges, levees, etc. as well as structures) on the floodplain must be compatible with flooding in an environmentally conscious and sustainable manner.

The flood of '96-'97 served as a harsh reminder that in any watershed the potential problems from episodic storm conditions are immense, diverse, and particularly widespread. California's climate is noted for the

episodic events, eliciting memories much more readily than memories of pleasurable climatic events. The hydrology section of this report has identified the situation in the Butte Creek Watershed relative to floods and it is clear that residents and users of Butte Creek will be dealing with similar events in the near future. Current traditional flood protection and control projects may, in fact, have a negative effect on floodplain function. It behooves everyone to discuss and plan early and often for these events in the future. Alternative management techniques may need to be employed. The habitat needs of humans and the wildlife that depend on this watershed and the riparian ecosystem must be carefully managed. Management recommendations that consider the best scientific information on habitat needs, protection and restoration, and the fluvial geomorphology of the creek must be developed within the parameters of the episodic nature of Butte Creek floods. Most importantly, human land use practices that may be contributing and exacerbating flood events must be carefully analyzed. This analysis will allow for the development of practices that are compatible with human needs within the laws and regulations designed to minimize impacts on the environment. A study of the fluvial geomorphology of the alluvial portions of Butte Creek, from above Helltown to Highway 162, will be conducted in 1998 by a team of private hydrologic consultants, Matt Kondolf, Ph.D., and John Williams, Ph.D. This report will provide valuable recommendations on the management balance necessary to protect people and the function of valuable riparian habitat and function.

10. There is a need to educate the public about appropriate management practices for the above 9 items.

With the recognition and prioritization of issues affecting the watershed, development of protection, restoration, and enhancement plans for specific areas is the logical next step. This was obviously recognized by the WAC and the stakeholders and many efforts already discussed and others to come will be initiated to try to best manage the diverse resources and uses thereof in the Butte Creek watershed.

A brief discussion of significant issues by category will hopefully provide some direction in looking beyond the top ten for the development of the management strategy. The numbers in parentheses refer to the order that they were brought up in the stakeholder meetings. The asterisks refer to items, which are included in more than one category.

1. *Flooding*

What's good to control? Some creek things are beneficial, others not (too costly). (1)

Final plan needs to address flooding. (56)

Peak flow flooding really ate into roads and culverts. (76)

Culverts plugged - Ponderosa Way and Bridges undersized for floods (all bridges). (57)

A review of other watershed projects show that while fire hazards are addressed, flood hazards are not. Can we include flooding as one of the "existing conditions"? (84)

Flood damage recently. -Solution: CDFG 1600's permitting can be flexible-want to work with landowners. Short term processes available. Staff will help. (44)

This category is discussed in general in Problem #9. Some of the issues are better understood at this point. Two of the topics related to peak flows and erosion are addressed to some degree in # 8 and #5 respectively.

2. *Dams*

By whom and how are reservoirs maintained? (59)

Okie Dam: What is best way to deal w/ problems associated with it? (6)

Desabla (Paradise and Magalia) Reservoir: Danger to downstream. Who maintains? Safety? What about future - upgrading? (26)

Increase levee protection in lower reaches of creek. (30)

Status of dams - look at them. (51)

Diversion dams - dangerous but people tube over them are and get caught. Solution: Need methods to get out - Safety. (70)

Safety issues at diversion dams is a valid concern and is not necessarily being addressed in the design of the new fish ladders and screens for the four main diversions, Parrott-Phelan, Durham Mutual, Adams, and Gorrill. Flood control is not part of operations of the dams in Paradise. There are discussions of upgrading the dams managed by Paradise Irrigation District but it does not seem likely that flood control capabilities will be a part of the upgrade. Increased flood control with levees in the lower watershed is a concern and should be more specifically defined relative to CALFED ecosystem restoration which calls for setback levees and reconnected riparian corridors.

3. *Woody Debris*

Debris: contributes to channel debris rerouting. (12)

Woody debris is habitat for fish, valuable. Solution: DFG: Educate folks on benefits/problems of debris: There are win/wins (i.e., woody debris for habitat, that isn't a hazard). (13)

Post harvest woody debris and licensed timber operators: Solution: Licensed timber operators should carry bond based on reputation and include road damage. (21)

What's happening now for danger Final Solution: Creek needs clearing. (45)

Put folks to work (i.e. off welfare, etc) to help clean debris. (35)

Flood brought debris into creek - very dangerous to tubing and kayakers. (66)*

Unusually high amount of debris in creek now - also cutting at bank. (67)

Woody debris important for water quality can also protect streambanks. Solution: Need balance (73)

Kayak/Tubers: hazard. Solution: Clear debris/reduce recreational use. (11)*

Woody debris is an asset for aquatic organisms and a problem for creek access for landowners and clogging problems for dams and bridges. Several bridges suffered damage from debris clogs in the 1997 flood and a monumental effort was undertaken to cut, burn, or otherwise dispose of potentially threatening large woody debris (LWD). This effort mobilized material that probably would have otherwise decayed in place, releasing nutrients to the surrounding areas. Much of this mobilized material ended up clogging fish ladders, necessitating extra efforts to maintain clear fish passage at these structures. LWD by nature enters the stream in relatively high flow events, most often episodic events that have numerous landslides and creek course changes. The change in course of Butte Creek at Parrott-Phelan dam alone took out five acres of forest in a matter of minutes. This is most likely the material that caused the greatest damage to the bridges but is virtually impossible to prevent. Bridges are an expensive item to repair or replace. Most modern bridges are designed for passing debris and several Butte Creek bridges are not up to these design standards.

4. *Recreation*

Recreational Uses: Impact on use of creek since other creek restricted. Users putting pressure on Butte Creek - increased traffic inadequate parking, trespassing, trash. (4) (83)

Recreational Use: - Solution: Alcohol checks and surprise checkpoints, garbage cans, Board of Supervisors enforce ordinances. (8)

Driving inappropriately is growing - drinking - flooding off road damage, parking, garbage, bathrooms. (53)

Uncontrolled dirt bike and off road vehicle use in the upper watershed. Causes erosion and increases sediments. (78)

Campers/Septic. (94)*

Look at regional needs and availability of recreation, habitat, and etc. (54)

Butte Creek Access: Exclusion moves problem to another location. Solution: Post signs for public access and private access, increase parking access for public access. (18)

Many of these items are summarized in Issue #1. Better management of recreation, primarily in the Canyon area is important. There is, however, a growing problem in other parts of the watershed with many of these same concerns. Trespass and the resulting damage from vehicles and left-behind garbage is a problem throughout the watershed. Lack of restroom facilities and unmanaged off-road vehicle use can degrade water quality.

5. *Creeks and Riparian*

Repairs and Maintenance of Creek - Solution: Contingency plan for landowners/ homeowners - who to contact during emergencies. (5)

Creek boundary: Is creek going to meander? Is it going to be kept in current channel? (29)

Give creek more room. (39)

City setback zones for urban creek areas a problem - Solution: Use this project to address. (3)*

Sedimentation causes problem contributes to fish passage problems, and hits carry capacity. (47)

Butte County and PIC received \$600,000 for 4 crews to clean. (71)*

What plans are being made to re-establish the creek to it's original banks on Little Butte Creek? (95)

Riparian systems are dynamic. (69)

Riparian and buffer looked at panacea - but doesn't work if uplands don't manage. (72)

Setbacks for riparian (WLPZ & THP) is not adequate (up and down). (49)

Riparian Forest: Very little in valley portion of creek. Solution: Educate landowners about management of (all landowners). (27)

Riparian Forest devastated. - Solution: Riparian restoration where appropriate. (7)

Most of these concerns are discussed in various other top ten discussions such as flooding, #9, urban runoff, #8 and water quality, #7. Management of the riparian corridor is important, as it is a priority habitat for the CALFED Ecosystem Restoration Program Plan. The corridor on Butte Creek is severely impacted by development both from urban and agricultural projects. Levees protect much of this zone, but the hundred-year floodplain extends beyond the levees and covers much of the land within 300 feet thereof throughout the valley. Plans to increase the amount of "shaded riparian aquatic" habitat are currently underway with projects such as the McAmis property acquisition in the lower canyon and the Keeney property acquisition in Durham. Allowing the creek to meander in the lower portions is being considered, however, hard point constraints such as dams and bridges must be considered. There are certainly opportunities to give the creek more room, which could in turn increase Shaded Riverine Aquatic habitat and the associated benefits, of recharge, slowing floodwaters, and capturing LWD.

6. *Urban Issues*

How can Human contamination be controlled in the Butte Creek Watershed?

Uncontrolled pets (dogs and cats) of homeowners in the upper watershed. (Detrimental to songbirds and other wildlife). (79)

Fishing and regulations effect on residents. (63)

Illegal water diversions for lawns by urban folks. (68)

How to have shaded corridors and still protect property behind them. (61)

Look at trespass problems. (52)

What is urbanization doing to flooding +/- watershed? (46)

Money for private landowners - roads and erosion control. (42)*

Effects of all septic tanks on creek. (28)

Land use: What are limits of urban growth, responsibilities of landowners. (25)

City setback zones for urban creek areas a problem - Solution: Use this project to address. (3)*

Restrict building in flood plains in future plans. (60)

How to control human contamination in water from homeless campers. Liability issues, too. (10)

Abandoned cars, appliances in upper watershed. (9)

Illegal dumping in the watershed yard waste, tires, refrigerators, etc. (82)

Urban related issues from a growing population cover the spectrum. Individually, these issues are relatively minor. They need to be recognized none the less for the current and potential impacts. Clean up and preventing illegal dumping is significant and is not being addressed effectively by the County or other groups. Regular creek and canyon cleanups occur but do not cleanup too many of the major dumping areas on Honey Run Rd. and Centerville Rd. Illegal diversion of the creek and contamination by human waste either directly from campers, mostly illegal, or from sub-standard or failed septic systems specifically can degrade water quality and pose health concerns. Focused recreation areas with toilet facilities, such as the Covered Bridge, and functioning riparian buffers will minimize these problems.

7. *Mining*

Reparation tax for all existing mines. (34)

Still feel the effects of old mining operations - some homes of old tailings - unstable. (64)

Look at mining operations. (75)

Mining is now much less of a factor in Butte Creek than a few decades ago, although the legacy of the '49'ers, the dredgers of the late 1800's and early 1900's, and the gravel operations of more recent decades, remains. Much of the cobble in the creek was introduced by miners working the creek bed and the banks. This bedload can be a problem when a wave of material moves through an already flooding area. This can raise the peak elevation of floodwaters in a particular area and cause channel changes that are difficult to predict. Areas developed on old tailing piles near the creek seem to be most vulnerable to bank erosion and have proven costly to maintain. The upcoming fluvial geomorphology study will help to define the extent of the problem. Other mining operations appear to be vulnerable to erosion, which can lead to sedimentation of the creek. Dredger mining can negatively affect fish habitat. It is only permitted in certain areas above the anadromous fish habitat.

8. *Fire*

Collectively need to protect airport for fire protection in watershed. Solution: California enter into agreement with Federal fire protection service. (16)

Airport access for fire tankers is currently moving. Solution: Move access to Oroville. (17)

Fire Issues need to be proactive in fuel loads management in urban areas. Solution: In plan address how to manage debris. (19)

Butte Creek Canyon dangerous for fires due to limited access to get in (volunteers). Solution: Fire management plan in Butte Creek Watershed Project. (20)

Use appropriate level of controlled burns. (55)

How do we collectively protect the Watershed from losing fire protection? i.e., Chico Airport CDF and Federal Air Tankers). (86)

Issue # 3 addresses most of these issue in that a fire management model is part of the ECR (see Fire chapter). This will lead to a management plan that can be implemented by the responsible agencies and landowners to manage vegetation and wildfire to reduce the risk of catastrophic fires and the resultant degradation of water quality.

9. *Agriculture*

BLM needs scrutiny on management of rangelands. (74)

Come to agreement w/ cattlemen about grazing in riparian habitat. (32)*

Include agricultural practices, etc., in plan. (23)

Timber harvest issue in a conservancy -(87)

Terminate all timber operations by extending the current exclusion time frame to Sept-May. (14)

Grazing has not been identified as a top issue but nevertheless, grazing management can be very effective at protecting water quality, increasing water infiltration, and water holding capacity in soils. In some cases in drier areas on the west side of the valley, exclusionary fencing, rotational grazing, reintroduction of native grasses and control burning has actually reestablished perennial streams. The obvious increase in water storage and yield is significant. Best management practices for most crops are promoted but problems of excess water, fertilizer and pesticide use continue to demand attention. Timber issues are discussed in Issue #4.

10. *Hydroelectric Production*

PG&E use of Butte Creek - problems associated with. (24)

Maintenance of flumes by PG&E causes effluent dumps and silt. (58)

Problems of loss of fish habitat, lack of water, impassable barriers, and sedimentation from flume cleaning operations, landslides, and flume failures combine to reduce trout and salmon populations significantly (see fisheries chapter). Operations have been modified in recent years but most of the problems still exist. Several studies have addressed the potential of the fish habitat above the Centerville Head Dam and concluded that it is suitable for approximately 500 pairs of spawning salmon. Access to this habitat is in part, hindered by the Head dam and it was recommended in 1977 by Flint and Meyer to install a fish ladder. Natural barriers are a problem also but have been easily laddered on Big Chico Creek and Deer Creek. Physically, access to this upper habitat is highly feasible with current restoration programs. However, socially and politically, the issue of introducing or reintroducing a species to a habitat where it has not been documented before, is a concern. Conflict with landowners, suction dredgers and hydroelectric operations, are certainly a problem.

11. *Fish and Wildlife*

Fish: should have continuous monitoring efforts/studies. (37)

Wildlife use: Study. (38)

Poaching of fish and other game species in the watershed. (80)

Bear hunting in the winter on native surface roads. Damages roads and increases sediment. (81)

Recent efforts to fund extra personnel and overtime have increased the presence of DFG wardens protecting the salmon habitat. Poaching of other animals does not receive as much attention however it is still a problem. Wildlife studies are not consistently funded unless there is a perceived problem. Winter hunting travel on unpaved roads is a source of increased sedimentation.

12. *Roads*

Unrestricted winter access to native surface roads. Damages roads and increases sediment. (77)

Money for private landowners - roads and erosion control. (42)*

Roads: runoff has effects on peak flows. (41)

Drainage ditches not maintained, etc. Who has control of the excess water? (90)

These issues are summarized in issue #5.

13. *Water Quality*

USGS: Pollutants entering Sac River from sheds. (88)

USGS and DWR are monitoring the waters of Butte Creek with much greater scrutiny (see water quality chapter). Increasing awareness of the factors that have contributed to the overall decline of the health of the Bay-Delta and its ecosystem is helping promote voluntary efforts to monitor and clean up waterways. Developing functioning riparian ecosystem can have a significant impact on buffering non-point source pollutants from the creeks and waterways.

14. *Review Items (Helpful Hints, Miscellaneous, and Questions)*

Extend confidentiality of archeological sites to the management people within the watershed. (15)

Federal and State grant moneys have requirements. - Solution: Be consistent when using them. (2)

Request RWQCB to review Butte Creek as critical watershed and make recommendations (i.e., timber, and fire). (22)

Do Cost-benefit analysis: who benefits? What is cost? (33)

Use existing info - don't rehash. (31)

CCC should also be used. Cost too high, needs to be modified. (36)

DWR has money for gauges "real-time." Need along creek. (40)

Need to educate on appropriate management practices. (48)

HEC2 studies need to be done. (62)

Interdisciplinary agency participation a harvesting natural resources. (92)

Is the Upper Watershed Project just a study of habitat or does it include options to open up the habitat? (96)

Who can obtain a copy of RFP now on Internet? To request \$ now available to Butte County and private proposal requests? (85)

Don't differentiate classes. (50)

CalFed none of those funds. Who else is managing these funds? (89)

Need guide to resource managers, etc. - local. (43)

Contact person list with the minutes. (91)

Ground water recharge capabilities need to be considered. (65)

Does BCWC have projects before the Butte County Public works dept to clean up flood debris on both sides of Butte Creek? What kind of creek bank erosion control is planned without cost to landowners? How and from whom does landowner go to get funds for flood damage land, creek banks, sand/silt removal? (93)

Many of these items are discussed elsewhere or are difficult to understand. Those that are clear are the need for better management practices in terms of water quality, (22), flow, (40), flooding and floodplain management, (62), groundwater management, (65), habitat conditions, (96), and flooding, (93). These have all been discussed elsewhere. The Watershed Management Strategy will incorporate these and help guide local resource managers in protecting, restoring and enhancing the watershed (43).