

Middle Creek Watershed Assessment

Executive Summary

A Document of the Middle Creek Coordinated Resource Management and Planning Group

Prepared for:

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Background

The Middle Creek Watershed is located in the Northern California Coast Ranges about 80 miles north of San Francisco. Middle Creek is the second largest tributary to Clear Lake, which is the largest natural lake located entirely in California. At 50,155 acres, the Middle Creek Watershed comprises 16.5% of the Clear Lake Basin and contributes an estimated 21% of streamflow to Clear Lake. Agricultural lands and the town of Upper Lake lie at an elevation of 1,340 feet at the low end of the watershed. In the upper areas of the watershed Mendocino National Forest (MNF) occupies 57% of total watershed area. The highest elevation in the watershed is 4,840 feet at High Glade Lookout.

This watershed assessment is a document of the Middle Creek Coordinated Resource Management and Planning group (MCCRMP), which formed in 1999 with the goal of protection and restoration of the watershed ecosystem. The purpose of this assessment is to collect and integrate information on past and present watershed conditions and management. The assessment is intended as a tool to educate landowners on watershed conditions and management needs. It also describes how watershed conditions affect Clear Lake, immediately downstream of the Middle Creek Watershed. The assessment is a collection of available information on the watershed, helps to identify data gaps, and provides a basis for watershed planning and identifies necessary watershed projects. The assessment builds on a 1999 Watershed Analysis completed by the United States Forest Service and County of Lake.

Watershed Information

In the Middle Creek Watershed Assessment information is assembled and summarized in the following areas:

- History
- Geology
- Soils
- Hydrology
- Hill Slope and Stream Channel Geomorphology
- Water Quality
- Water Supply
- Terrestrial Wildlife Habitats and Species
- Aquatic Wildlife Habitats and Species

- Invasive Species
- Fire and Fuel Load Management
- Social and Economic Setting
- Land Use
- Current Watershed Management

Findings and Recommendations

Findings and recommendations in the areas identified by the MCCRMP as watershed priorities are summarized here.

Protecting Water Quality

High sediment loads can smother gravel beds and other important aquatic habitat components. Sediment contributes nutrients to stream systems, and sediment is the leading source of excess nutrients to Clear Lake. Anecdotal evidence indicates that sediment loads may be greater from the east than west fork of Middle Creek. MNF is completing a road and trail survey that will assist with prioritizing projects to improve road drainage and decommissioning in the Middle Creek Watershed. While most of the mountainous terrain in the Middle Creek Watershed is in MNF, a survey on the condition of county and private roads in the upper watershed is also needed. Surveys are needed to determine what additional factors contribute to erosion and sedimentation in the Middle Creek Watershed, and whether there are sub-watershed differences. Other factors potentially contributing to sediment loads in Middle Creek include inherent differences in soils, geology, aspect, and vegetation, or differences in the impacts from human activities such as OHV use, road construction and maintenance, and fire and fuel load management.

Several areas have been identified where there are unstable stream channel conditions and significant streambank erosion. OHV travel occurs in and adjacent to the channel of Middle Creek in the area of the confluence and upstream approximately 2 miles on the east fork. Eliminating OHV travel in the channel, and re-routing trails to prevent damage to streambanks and riparian vegetation are needed in this area. Middle Creek below the confluence is another area with significant streambank erosion.

Studies of potential toxic pollutants of surface waters in the Middle Creek Watershed have been very limited. A monitoring program by the LCWPD did not find elevated mercury levels in the watershed. Sampling for pesticides on three dates detected only one exceedance for DDT. DDT is a pesticide that persists in soil but has been banned in the United States for 37 years.

Groundwater has been sampled by DWR on an infrequent basis since the 1940s. Primary drinking water standards to protect public health were exceeded twice for arsenic and once for barium. The presence of these two elements is likely to be due to natural geologic and hydrologic conditions. These exceedances highlight the importance of testing private drinking water wells for potentially dangerous constituents.

Ensuring Water Availability

Most water use in the Middle Creek Watershed is from groundwater aquifers, especially those in Middle Creek and Clover Valleys, where most residents and agricultural areas are found. To the south of the watershed in the Rodman Slough and Reclamation areas, most water use comes from agricultural use of Clear Lake and Middle Creek waters.

The available studies of groundwater supplies and water use in Middle Creek and Clover Valleys indicate that groundwater overdraft is not currently a threat. On average years, only about 50% of the estimated safe yield of groundwater is being used. However, the estimate of groundwater availability is limited to one 1978 study, and additional studies could significantly improve understanding of these groundwater resources.

Reducing Wildland Fire Hazards

The most common perspective on wildland fire hazard reduction focuses on reducing the threat that fires from wildlands will threaten human lives, health, and property. Another perspective recognizes that high fuel loads, caused by decades of fire suppression, can lead to severe wildfires that damage terrestrial and aquatic wildlife habitats. The former perspective will be discussed in this section while the latter will be discussed in the section below.

The most populated areas of the Middle Creek Watershed lie in areas with low fire hazard. However, significant numbers of residences do occur in areas with moderate to high fire hazard along Rancheria Rd. and in Clover Valley. Scattered residences occur in upper watershed areas where fire hazard is very high.

Property owners, renters, and managers are required by law to maintain defensible space around buildings and residences. The 2009 Lake County Community Wildfire Protection Plan contains a wealth of information on fire risk and management in the county. The plan identified the need to improve water supplies for fire protection in Upper Lake, and it identified a number of high priority fuel reduction programs. To insure that these priorities are met, and to continue the process of identifying and managing fire hazards, watershed residents can participate in the Lake County Fire Safe Council. Neighbors and communities can work together to create Firewise Communities to improve local fire safety.

Encouraging Abundant and Diverse Wildlife Populations

This section focuses on terrestrial wildlife, and the following section focuses on fish. However, there is some overlap in the sections, because many species use both types of habitats, and many human activities affect terrestrial and aquatic habitats.

Land uses that have had a large impact on wildlife habitat in the past, but are no longer as common and/or extensive, include conversion to agriculture, livestock grazing, logging, and in-stream gravel mining. Land uses that continue to have major potential impacts are discussed briefly below. They include on-going agriculture, road building

and maintenance, introduction of invasive species, and OHV recreation. Increased use of fire by early settlers may have had a large impact on plant communities, but in recent decades fire suppression has been the major influence.

On-going agricultural operations have the potential to reduce streamflows due to spring and summer irrigation, reducing water available for terrestrial wildlife and aquatic organisms. The recent reduction in pear acreage in the Middle Creek Watershed has reduced water demand from agriculture.

The introduction and spread of invasive species is an on-going threat, and increased prevention, monitoring, and control are needed to minimize this threat.

One of the most significant ways in which upland habitats could be managed to improve wildlife habitat is through the use of prescribed burning. The forest management focus on fire suppression since about 1917 has led to high fuel loads. These high fuel loads threaten forested areas, including riparian trees. The Fork Fire in 1996 is an example of a large-scale fire that burned riparian areas along with large areas of forest and chaparral. The 1999 Watershed Analysis Report emphasized the importance of prescribed burning in chaparral areas, and fuel treatments such as thinning and under-burning in forested areas to reduce the threat of high intensity wild fires and protect wildlife habitat. Reducing fuel loads in forested areas will allow late successional forest areas, and the species that rely on them, to recover and expand. A reduction in the scale and intensity of fires will protect riparian areas that are vital to both terrestrial and aquatic wildlife. To the extent that prescribed burning of chaparral can prevent large scale fires while providing a constant supply of early successional brush stands, it could lead to healthy, stable deer populations.

Improving Native Fish Habitat and Populations

The extent of the contribution of roads and vehicle traffic to sedimentation of streams is not adequately documented on MNF or private lands. In particular, OHV use in unauthorized areas and in stream channels near the Middle Creek Campground (located at the confluence of the east and west forks of Middle Creek) may have significant impacts. MNF funding for road maintenance has declined substantially in recent decades.

There have been no recent studies of fish populations and stream conditions in the upper watershed. A past study (1980) described fish populations on the east fork of Middle Creek. Additional studies would provide a valuable comparison for this area and baseline conditions for other streams.

In the lower watershed, spawning migrations of the Clear Lake hitch and Sacramento pikeminnow have been greatly reduced relative to historic levels, and the Clear Lake splittail may be extinct. Recent volunteer monitoring has found a complete lack of hitch in Middle Creek in 2006 and 2007, and very low numbers in 2008 and 2009 (Section 11.2.1). Local residents have formed a Coordinated Resource Management and Planning group, the Chi Council, and efforts are underway to improve understanding of

hitch biology and factors impacting their populations. Although barriers on the main creeks have been identified, a thorough survey of barriers to fish passage on all smaller tributary streams is needed. Elimination of barriers (by removal or construction of ladders), is likely to be an important part of improving spawning success.

Stream sampling for pesticides is costly. Stream bioassessments and surveys use relatively simple methods to gage the ecological health of a stream system and offer opportunities for volunteer involvement. Creek walks and greenline surveys were carried out by the Middle Creek CRMP in 2005 and 2006 in lower Middle Creek. Bioassessments were made at one location in below the Clover Creek Diversion Channel in 2005 and 2006, and these also provide opportunities for volunteer participation and regular monitoring of aquatic and riparian habitats. Continuing these types of monitoring, and possibly expanding efforts to locations in the upper watershed could be an effective way to monitor aquatic habitat conditions.

Restoring Middle Creek below the Confluence

The MCCRMP, Robinson Rancheria Tribe, and other groups have focused efforts on restoring and documenting conditions in Middle Creek in the area of the confluence of the east and west forks and downstream to the Hunter Bridge area. This section of creek has been severely damaged by gravel mining and stream channelization in Upper Lake Valley, particularly construction of the USACE Middle Creek Flood Control Project in 1959-1966. Major additional efforts will be required to restore the creek channel and riparian vegetation. Restoration efforts thus far include a series of 10 small projects installed in 2000-2002, and the “dragon’s teeth” weirs installed in 2006 near the Middle Creek campground.

A first step to continuing creek restoration will be to assess the success of the restoration projects implemented in 2000-2002. Depending on the success of these projects, additional small-scale projects may be warranted, or taking a larger-scale, more comprehensive approach may be needed. Under this approach stream restoration would be carried out in sections delineated by control points, for example from where the streambed narrows about 2 miles above the confluence, down to the confluence, then from the confluence about one mile downstream to where the streambed narrows again, and so on. Below the confluence, restoration projects are complicated because of ownership by numerous private landowners.

Information and Data Gaps

- Causes and locations (sub-watershed) of erosion and sedimentation.
- Riparian and aquatic habitat conditions in the upper watershed.
- Condition of 2000-2002 restoration projects on lower Middle Creek.
- Barriers to Clear Lake hitch passage in tributaries to Middle Creek.

Recommendations

- Survey roads and trails outside MNF for erosion potential.
- Improve road and trail maintenance. Decommission and reconstruct roads and OHV trails as needed to reduce erosion.
- Evaluate riparian and aquatic habitat conditions in the upper watershed. Priority should be east fork of Middle Creek, followed by the west fork of Middle Creek and other streams.
- Evaluate OHV impacts on aquatic and riparian systems from sedimentation and travel in and adjacent to stream channels.
- Re-route or otherwise manage OHV travel to prevent stream damage.
- Complete summarizing and evaluating data from creek walks and greenline surveys on lower Middle Creek.
- Continue systematic surveys of lower Middle Creek to evaluate changing stream conditions.
- Continue restoration of Middle Creek below the campground.
- Extend bank stabilization near Middle Creek Campground.
- Organize multi-jurisdictional survey of Middle Creek and its major tributaries for Arundo, Tamarisk, and tree-of-heaven.
- Increase prescribed burning of chaparral to improve wildlife habitat and streamflows and reduce the threat of catastrophic wildfire.
- Update the Upper Lake groundwater basin investigation.
- Complete the Middle Creek Flood Damage Reduction and Ecosystem Restoration Project, which would reduce sediment loads from the Middle Creek Watershed to Clear Lake.