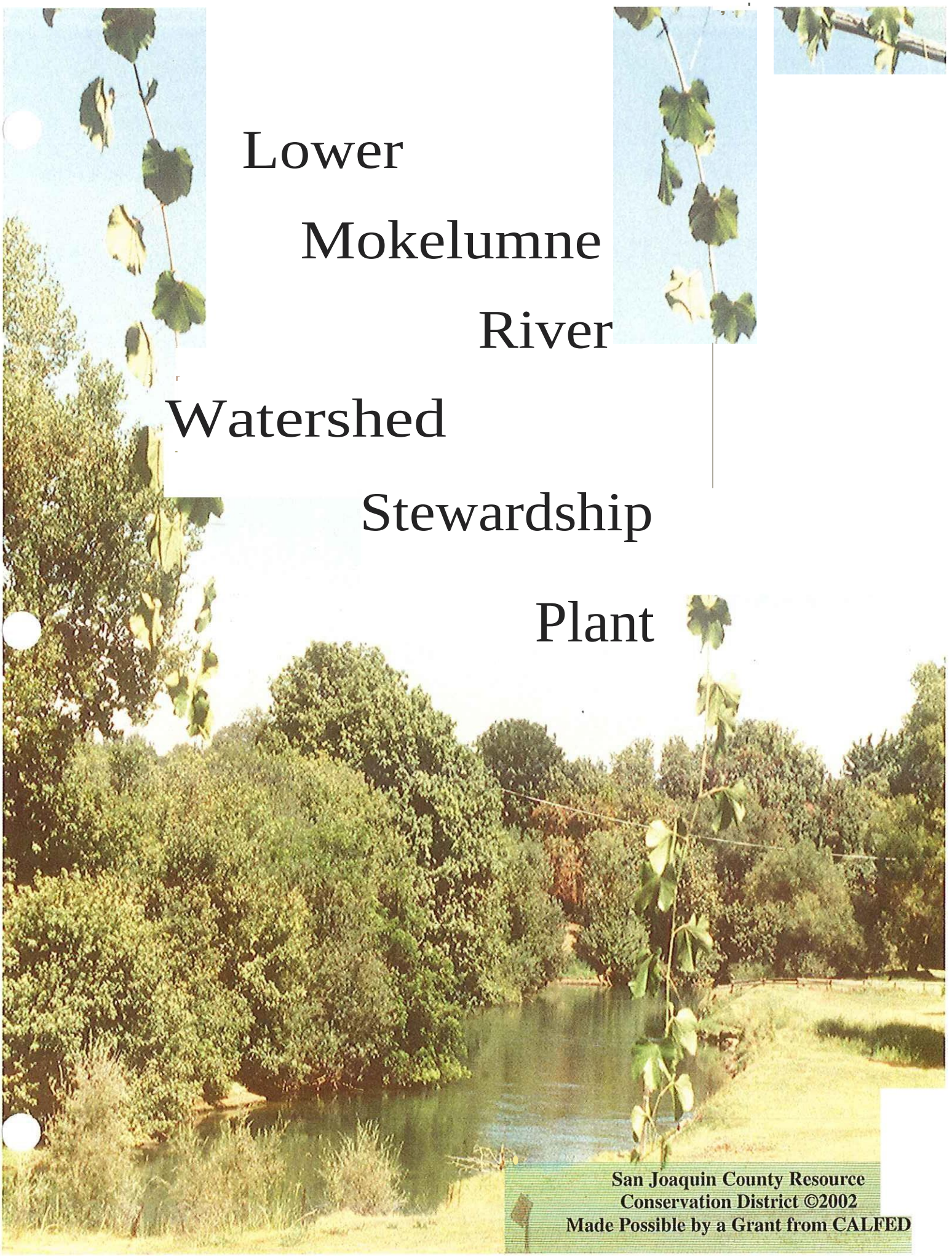
Lower Mokelumne River Watershed Stewardship Plant



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Made Possible by a Grant from CALFED

Lower Mokelumne River

Watershed Stewardship Plan

A project of the:

San Joaquin County Resource Conservation District
&
The Lower Mokelumne River
Watershed Stewardship Planning Committee

Acknowledgements

Lower Mokelumne River
Watershed Stewardship Planning Committee

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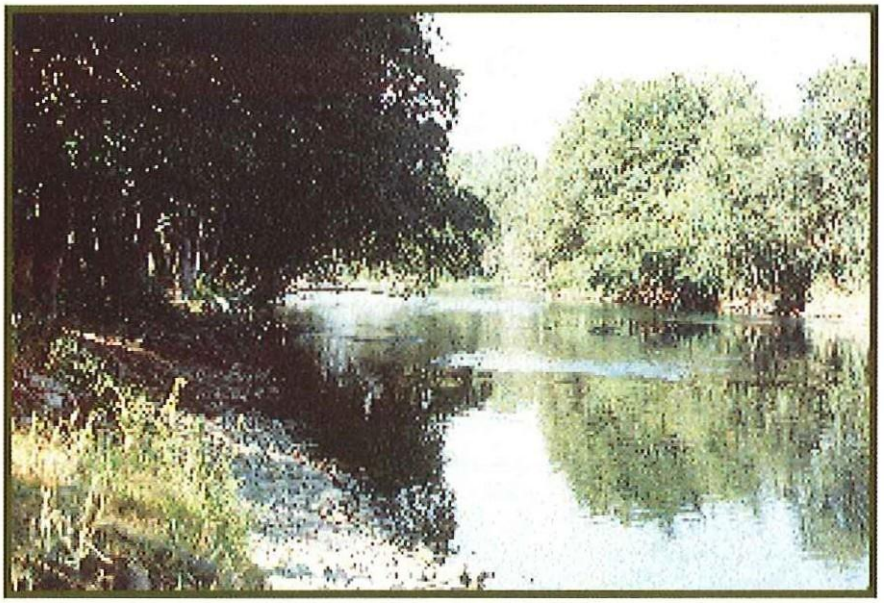
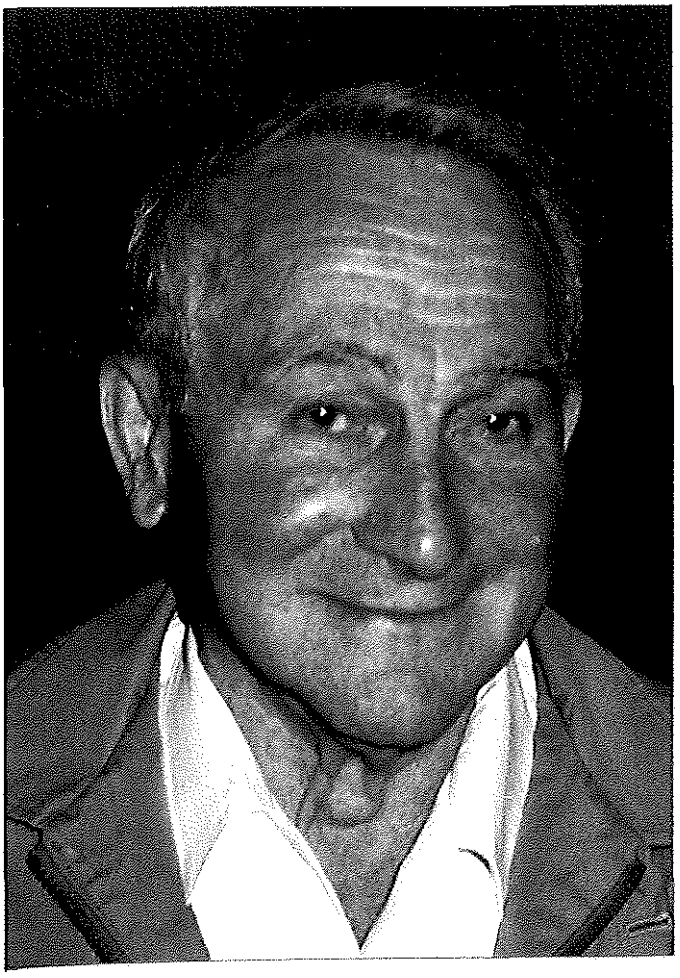
Funding for this program was made possible by a grant from CALFED



Dedicated to the memory of Julian O. Bava, Secretary and Director of the San Joaquin County Resource Conservation District whose contagious enthusiasm and persistence made this project a reality



San Joaquin County Resource Conservation District
May 23,2002

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Preface

The guiding principle of the Lower Mokelumne River Watershed Stewardship Plan is that all of the constituents of the Lower Mokelumne River Watershed are interrelated. No single element or action stands alone. Good stewardship is about pointing a fmger at ourselves and not at each other. As such, the reader is reminded to consider each chapter of this Lower Mokelumne River Watershed Stewardship Plan as a component of a broader picture--an *overall* approach to the good stewardship of the Lower Mokelumne River Watershed-an approach which depends on many different actions by many different individuals working towards a common goal.

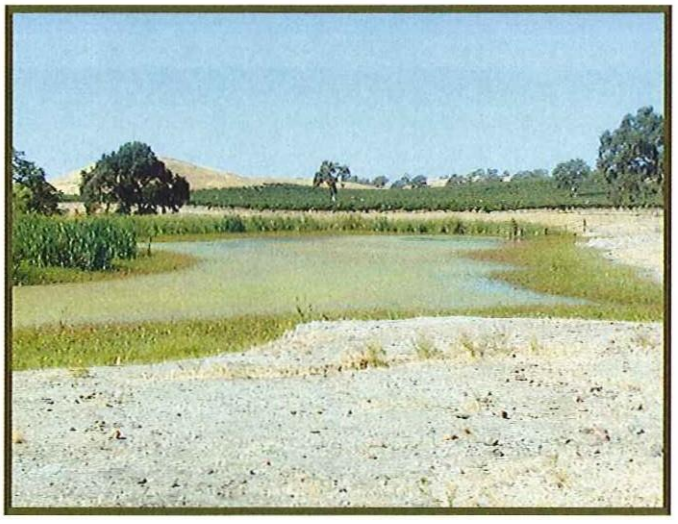
1. Introduction

This Lower Mokelumne River Watershed Stewardship Plan (LMSP) encourages all of us to take individual responsibility for maintaining and improving the resources of the Lower Mokelunme River Watershed. And, it=s easy to get involved!

Tllis Plan provides a roadmap for the Lower Mokelumne River Watershed community to take charge of the maintenance and improvement of the watershed=s resources. Whether tlu·ough participation in a river clean-up day, sampling water quality at storm drains, planting native grasses on the farm to ftlter runoff from soils, or just cleaning up those leaky containers in the garageBeveryone can become a steward of the Lower Mokelumne River Watershed.

Though the principles contained in this document focus on the Lower Mokelumne River, many of the principles can be applied to other watersheds. The authors hope that the LMSP will spark your interest in participating in and even spearheading watershed stewardship in your community.

Remember, we **all** live in a watershed.



Murphy Creek

Overview of the Lower Mokelumne River Watershed

The Lower Mokelumne River Watershed (LMR) stretches fi·om the base of Camanche dam to the confluence of the Cosumnes and Mokelumne Rivers (see map, following page).

Quick Facts

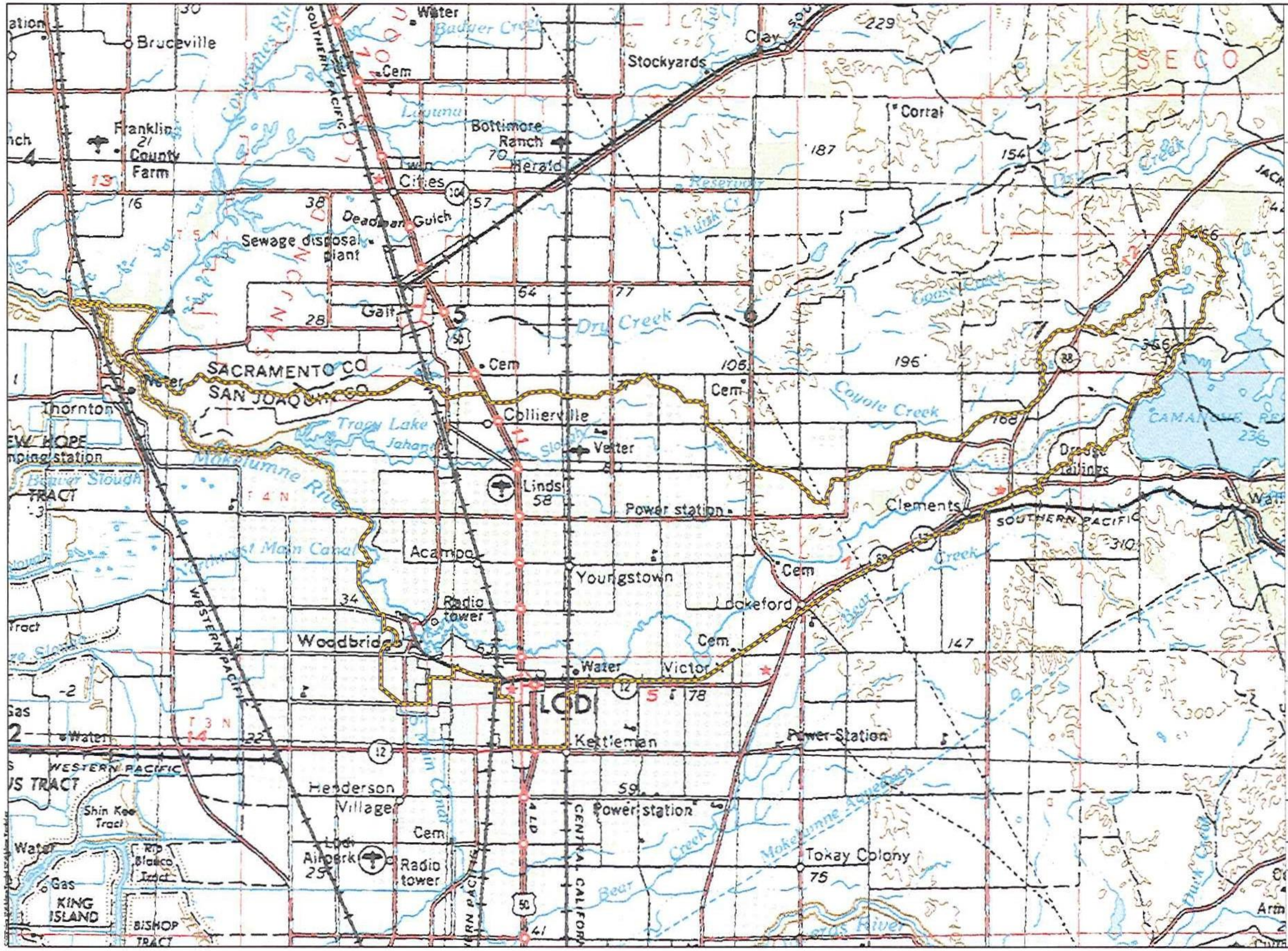
- 52,688.3 acres
- 80 +/-Square miles
- Includes portions of the following counties:

  Amador (1,251.7 acres),
  Sacramento (644.5 acres), and
  San Joaquin (50,792.1 acres)

- Incorporated cities: Lodi
- Defmed communities within the Watershed: Acampo, Lockeford, Clements, Victor, Woodbridge, Collierville
- Major tributaries: Murphy Creek, Jahant Slough
- The LMR is part of the U.S. Environmental Protection Agency's Lower Cosumnes-Lower Mokelumne River Watershed
- Watershed Unit Number: 18040005

San Joaquin County, California

Appt·oximate Mokelumne River Watershed Location:
Northern San Joaquin Com1ty



LOWER MOKELUMNE RIVER WATERSHED

DRAFT

Lower Mokelumne River Watershed
San Joaquin County, CA

Watershed Boundary

Note: GIS Data Projection: CA State Plane, NAD 83, Zone 3, feet.

N

5,000 0 5,000
Feet

1 0 1 2
Miles

Sources: East Bay Municipal Utility District, 1:250K DRG's, August 30, 1999; Mike Callahan, Civil Engineer, San Joaquin County, Personal communication with EIP Associates regarding watershed delineation, March 2001; Rick Leong, EBMUD, Personal communication with Amy Augustine regarding watershed delineation, April 6, 2001; and EIP Associates, Watershed Boundary and GIS Program, June 6, 2001.

PROJECT NUMBER: 10529-00

Requested by: AA Created by: NAJ Date: 6/6/01

EIP
ASSOCIATES

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For Additional Information or to Order Products

Visit: www.sjcrcd.org

Call: (209) 472-7127 Ext. 125

Write: San Joaquin County Resource Conservation District
Attention: Watershed Coordinator
3422 W. Hammer Lane, Suite A
Stockton, CA 95219

Current Price List

Lower Mokelumne River Watershed Stewardship Plan .....*$25.00* + S&H

Mokelumne River Watershed Owner's Manual .....*$15 .00* + S&H

Reflections in the River (VHS, 12.5 minutes).....$10.00 + S&H

Reflections in the River (CD, 12.5 minutes) .....$10.00 + S&H

Additional materials, including teaching aids, are available. Please visit our website at www.sjcrcd.org to learn more.

2. Education

BACKGROUND

The primary means by which the Lower Mokelumne River Watershed Stewardship Plan (LMSP) intends to achieve its goals, is through education and assisting individuals, groups and agencies to undertake voluntary, stewardship-based activities which conserve and improve the watershed's resources. This Education Element is central to the success of that strategy and interrelates with all other elements of the LMSP.

The Lower Mokelumne River Watershed Stewardship Plan intends to promote educational opportunities within the watershed targeting elementary school children, high school students, local college students, watershed residents, farmers, stakeholders and visitors of all age groups and others who might benefit from watershed-based educational programs.

EXISTING EDUCATION PROGRAMS AND RESOURCES[1]:

Mokelumne River Watershed Owner's Manual: Based on the Home*A*Syse model, the *Mokelumne River Watershed Owner's Manual* is a voluntary, stewardship-based workbook to guide homeowners in reducing non-point source pollution. The workbook was prepared by the San Joaquin County Resource Conservation District in partnership with the Lower Mokelumne River Watershed Stewardship Planning Committee. The manual provides guidelines for evaluating property and formulating action plans to reduce or eliminate non-point source pollution for homeowners and other residents of the watershed. Topics addressed include: storm water management, reducing pollutants in runoff, landscaping and property management to reduce runoff, drinking water well management, well location and maintenance, household wastewater and septic/sewer systems, managing hazardous household products, product disposal, managing swimming pools and similar topics.

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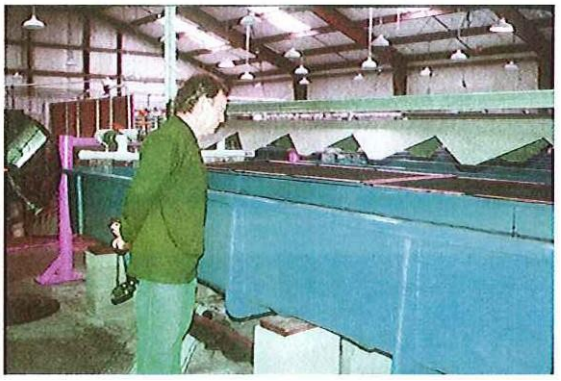
[1] See "Resources" at the end of this publication for contact information for each of the programs and organizations listed.

[2] Adapted with permission from NRAES-87 Home*A*Syst: An Environmental Risk-Assessment Guide for the Home.

Mokelumne River Hatchery: The Mokelumne River Hatchery, located at the base of Camanche Dam, is operated by the California Department of Fish and Game and is owned by the East Bay Municipal Utility District. Self-guided tours of the facility are available Monday through Sunday from 7:30a.m. to 4:30p.m. Per the California Department of Fish and Game, approximately 15 tours per week are provided for student primarily from San Joaquin County between October and January of each year. Students are normally second graders through eighth graders. Due to limited staffing, organized tours for non-school organizations are infrequent. The hatchery will be closed for renovations, reopening in 2003.



Lodi Lake Nature Area Docents: Since 1987, the City of Lodi Parks and Recreation Department and the Lodi Unified School District, have worked together to create an outdoor education program at Lodi Lake Park. A 58-acre nature area, with marked trails, provides students with an opportunity to see a remnant of the riparian forests which once flourished along the Mokelumne River. A small Discovery Center at the lake is open, by appointment only, for visitors wishing to see and learn more about the area's natural resources.

School Aquarium Program: The local fly fishermen's club coordinates annually with the Mokelumne River Hatchery and local schools for the School Aquarium program. This program provides salmon and steelhead eggs from the Mokelumne Hatchery for individual classes in San Joaquin County Schools. Approximately 50 eggs per class are provided, along with refrigerators and aquariums by the fly fishermen's club. Teachers are given a training session on how to raise the fish. Hatchlings are released into the river by the students. Participating grades are concentrated in the elementary and junior high school grades.

"Discover Lodi!" Wine and Visitor's Center: The Wine and Visitor's Center opened September 10, 2000, at 2545 West Turner Road, in Lodi. The center houses both the Lodi Woodbridge Winegrape Corrunission and the Lodi Visitor's and Conference Bureau. The center includes public education displays related to growing grapes, making wine, integrated pest management and other watershed issues related to the winegrape industry in the watershed.

Interactive monitors and an aerial video of the wine-growing region are just a few of the educational materials which are on display.

Hill House Museum: The Hill House Museum, located at 826 S. Church Street in Lodi is open 1-4 p.m. on Sundays and for special tours. The museum's focus is historical Lodi. The museum is currently seeking expansion opportunities. While physically located outside of the watershed, the museum nonetheless provides extensive information related to the Mokelumne River which has had a strong influence on the development of the City of Lodi.

Central Valley Waste Services: CVWS offers educational programs promoting a clean environment. Specifically, CVWS emphasizes educational programs for: a) second graders regarding how recycling preserves natural resources and b) fourth graders discussing source reduction of trash. Thousands of children benefit fi·om these programs annually. CVWS also provides tours of its materials recovery center on Turner Road available for all age groups fi·om pre-school, through high school, college, parents and seniors.

San Joaquin County Department of Public Works Solid Waste Division-Household Hazardous Waste Program: This agency is responsible for promoting disposal of household hazardous wastes (e.g., paints, alkaline batteries, oil etc.). Annual clean-up days for hazardous wastes are sponsored throughout the County with at least one clean-up day at a location within the watershed. Public education related to household hazardous wastes comes fi·om this department.

Boy & Girl Scouts of America and Other Youth Groups: There are several troops within the watershed which are very active within the community. Scouts regularly participate in community programs which affect the watershed earning merit badges for various activities (e.g., installing "Don't Dump/To River" signs, planting native plant gardens at Lodi Lake). Similarly, 4-H, Future Farmers of America (FFA), and other youth groups often take an active role in stewardship-based activities within the watershed area.

U.S. Department of Agriculture Natural Resource Conservation Service (USDA/NRCS)-San Joaquin County Resource Conservation District (RCD): The USDA NRCS provides assistance and educational materials for farmers, schools, and residents within the watershed. The San Joaquin County Resource Conservation District provides community outreach and is providing oversight and staffing for the Lower Mokelumne Watershed Stewardship planning effort. The RCD's nine-member board is appointed by the San Joaquin County Board of Supervisors. The RCD holds monthly meetings each third Thursday of the month froml2:00-2:00 at the Stockton Service Center. The Stockton Service Center is located at 1222 Monaco Court, Suite 23 (just off the intersection of March and Pershing) in Stockton and may be reached at (209) 946-6465 Ext. 125.

Lodi-Woodbridge Winegrape Cmmnission: The Lodi Woodbridge Winegrape Commission has prepared the *Lodi Winegrower's Workbook* addressing best management practices for vineyards. Tllis educational program is ongoing as the LWWC works with local growers to implement various aspects of the workbook which addresses viticulture, soil management, water management, pest management, habitat, human resources, wine quality and other aspects of the winegrape growing industry. LWWC also sponsors the School Trunk Program targeting fourth grade students, but available to 2nd-7th grades. The School Trunk Program teaches how grapevines came to California and describes one year in the growing season using, among other tools, pictures, charts of vocabulary words and word searches. Ten to thirty classes per year participate in tllis one-hour program which is free to schools and available to northern San Joaquin County.

San Joaquin County Office of Education: The San Joaquin County Office of Education was awarded a CALFED grant in 2001 for its Delta Studies Program targeting the 30,000 K-12 graders in 60 schools in San Joaquin County with an emphasis on grades K-6. The program will emphasize fulfillment of California Academic Standards through classroom lessons focused on aquatic and terrestrial habitats and ecological functions of the Delta. The program will accomplish its goals through three primary activities: Preparation of a Delta Studies Curriculum focusing on K-8 and grades 9-12; establishment of a Delta Education Resource Center at the Office of Education; and training of selected teachers-Delta Education Leaders for Teaching and Action (D.E.L.T.A.) to forward in1plementation of the curriculum. The Delta Studies Program is expected to run for three years and incorporate elements of Project Wild, Project Wet and Adopt-A-Watershed.

Schools: Elementary and High schools located within or serving the watershed area also participate in and promote educational programs provided through the San Joaquin County Office of Education or other private organizations. These schools include: Lodi High School, Clements Elementary School, Lockeford Elementary School, Victor Elementary School, Houston School, Woodbridge Middle School, Oakview Union Elementary School, Galt Joint Unified School District, New Hope Elementary School, Mokelumne River School, Lodi Seventh Day Adventist Elementary School, St. Anne's School, St. Peter Evangelical Lutheran School, Lodi Elementary and Middle Schools (Beckman, Clairmont, Creekside, Davis, Henderson, Heritage Intermediate, Heritage Primary, John Muir, Lakewood, Lawrence, Live Oak, Mahin, Nichols, Oakwood, Parklane, Reese, Sutherland, tokay Colony Turner, Vinewood, Wagner, Washington, Washington DCH, Westwood, Delta Sierra, Lodi Middle, Morada Eastview, Woodbridge Middle), Bear Creek High School, Tokay High School. Programs sponsored by the San Joaquin County Office of Education are described in the preceding paragraph.

Delta College, the University of the Pacific, CA State University Stanislaus and numerous private educational facilities provide higher education opportunities within the watershed. Delta College is currently pursuing the establishment of a Natural Resources Program which is expected to include courses in watershed management. Schools throughout San Joaquin County and southern Sacramento County are targeted for participation in education programs contained within the Education Element of the LMSP.

San Joaquin County Mosquito and Vector Control District: This agency provides an Integrated Pest Management (IPM) Program for schools and adult groups. School programs targeting 5th graders reach 5,000-7,000 students annually. The school program focuses on the prevention of mosquitoes and ticks and includes methods for reducing the likelihood of becoming a victim of multiple-sting attacks fi·om honeybees. Presentations are also available for high schools and focus on mosquitoes and their biology. Adult group presentations address district operations and vector-borne diseases.

San Joaquin Farm Bureau Federation: The San Joaquin Farm Bureau Federation sponsors a program called Agriculture in the Classroom targeting K-l2th grades. The program is undertaken by approximately 50 teachers each year and focuses on water and agriculture.

San Joaquin County Agricultural Commissioner's Office: This office designs and implements numerous educational programs including a Dormant Spray Education Programs for growers around watersheds which is ongoing and stresses best management practices. The program currently focuses on the San Joaquin River watershed. The agency also provides educational programs including its most recent seminar pertaining to best management practices related to sulfur use.

U.C. Cooperative Extension: This agency provides extensive education program addressing watershed management. A few of the most recently developed programs include homeowner education programs targeting the use of residential pesticides (currently funded by CALFED and targeting Diazinon and Dursban) and a new curriculum targeting grades 3-6 emphasizing water and pesticide education. The agency also holds regular farm commodity meetings (e.g., tomato, corn, asparagus, etc.) which emphasize best management practices related to water use and pollution.

City and County Parks: Numerous city and County-owned and operated parks exist within or in close proximity to the Lower Mokelunme River Watershed. The largest of these include: Micke Grove Park and Zoo and Lodi Lake. Smaller parks include Stillman Mc.Gee Park and Woodbridge Park. Large, quasi-public park facilities also are provided at the East Bay Municipal Utility District's day-use facility at the base of Camanche Dam and at the Woodbridge Golf and Country Club. These parks provide opportunities for hands-on recreational/education programs

(e.g., the Lodi Lake Docent's school tours of the Lodi Lake Nature Trail) and educational displays (e.g., Micke Grove Zoo, dioramas). The LMSP effort intends to identify those parks where educational opportunities are being underutilized and might be expanded to promote watershed education issues. Please refer to the "Recreation" Element of the LMSP for additional information related to public parks within the watershed.

Fire Districts: Fire prevention education is an important aspect of watershed planning. The following fire districts are located within the watershed and based at the indicated locations: Lodi City Fire Department (217 W. Elm, Lodi), Clements Rural Fire District (18901 E. Highway 88, Clements), Mokelumne Rural Fire District (13157 E. Brandt Rd., Lockeford), Woodbridge Fire District (400 E. Augusta, Woodbridge), Liberty Fire District, Delta Fire District and the Thornton Rural Fire Protection District (25999 N. Thornton Road, Thornton). Please refer to the Emergency Services and Fire Prevention Element (Chapter 10) of this plan for details related to size, service areas and operations of these districts.

Audubon Society: The San Joaquin Audubon Society provides educational opportunities for third-sixth graders through its Audubon Adventure Classroom Kits which provides a teacher resource manual and 32 "newspaper" format handouts for students along with other educational materials addressing such topics as migration, bats, rivers, songbirds, habitat, water birds, wetlands, wildlife, backyard birding and other topics. The program reaches 20-30 classrooms in the county and has been in effect since 1984. Teachers signing up for the program are sponsor by the Audubon Society which purchases the kits for interested teachers. Audubon also maintains two Science-in-a-Suitcase Kits which are made available to schools (public, private and home schools), local civic groups and other interested individuals). Audubon also sponsors group outings for adults and children focusing on bird identification and observation.

San Joaquin County Historical Society and Museum: The San Joaquin County Historical Society sponsors numerous educational programs related to watershed issues including agricultural history, environmental issues and cultural resources topics. Valley Days is an intensive environmental learning program offered to third and fourth grade students. Slide shows offered by the Society include histories ofLodi and Lockeford. The Society also operates the San Joaquin County Historical Society Museum located in Micke Grove Park which offers additional resources including a display of agricultural equipment. Please refer to the Cultural Resources Element of the LMSP for additional details related to this agency.

Lodi Youth Commission: The Lodi Youth Conmlission sponsors a Teen Lead Program which involves teens in community issues including solid waste management and similar topics.

Friends of Lodi Lake: Friends of Lodi Lake is a hands-on organization to benefit Lodi Lake, the Mokelumne River and the Lodi Lake Nature Sanctuary. The group advocates necessary stewardship to preserve and enhance the natural beauty and tranquility of Lodi Lake proper.

Visitors to Lodi Lake enjoy the seven varied theme gardens planted by the organization. Friends of Lodi Lake hold monthly meetings providing a platform for the discussion of issues affecting Lodi Lake.

City of Lodi: The City of Lodi sponsors a water conservation education program targeting K-6.

City of Lodi Citizen Monitoring Program/Storm-Drain Detectives: In October, 2000, the City ofLodi's Public Works Department began a local Mokelumne River Citizen Monitoring Program focusing on locations where the City's storm drains enter the river. Also called the "Storm Drain Detectives," this Citizen Monitoring Program is a collaborative effort of the City of Lodi Public Works Department, State Water Resources Control Board Division of Water Quality, Lodi Lake Nature Area Docent Council and four local high schools. Monthly monitoring of the Mokelumne River and Lodi's storm water is done by students and teachers, grades 7-12, and other volunteers who have been trained by a program coordinator. Students participating in the program may receive school credits. In April, 2001, a CALFED grant was awarded to the City of Lodi to expand tllis monitoring and education effort in the Lodi area.

For more details about the program, sampling locations, and monitoring results, go to the City of Lodi web site at www.lodi.gov and search for "Storm Drain Detectives."

San Joaquin Resource Conservation District Website: Educational materials related to watershed stewardship programs, activities and other resource-related information may be found at the San Joaquin Resource Conservation District's website at www.s jcrcd.org.

Leadership Institute's Adopt-A-Watershed: Adopt-A-Watershed is a K-12 school-community learning experience which uses local watersheds as living laboratories where students engage in hands-on activities. The program is sponsored by the Leadership Institute. Five primary elements are emphasized: 1) applying science concepts directly to the local watershed, 2) monitoring local watersheds through field study, 3) restoring watersheds through conununity need-based projects, 4) educating through community action projects and 5) reflecting upon concepts learned while making contributions to the community. The program addresses plants, wildlife, aquatics, ecosystems, soils, geology, vegetation management, and cultures with a curriculum consistent with state requirements. Training for teachers is included in the program. Approximately 120 teachers in San Joaquin County are currently involved in the program.

Learning Under Creative Concepts (LUCC): Tllis organization provides stewardship-related programs for young first-offenders and other at-risk youths which help to foster responsibility and self-esteem. Undertaken primarily on LUCC-owned property, these stewardship-based programs include agriculture, riparian restoration, horse rehabilitation, and similar programs.

GOALS

When achieving these goals, we must remember that all of the constituents of tlte Lower Mokelumne River Waters/ted are interrelated and that good stewardship is ensuring support and maintenance for all beneficia/uses of the Mokelumne River.

./ Promote educational opportunities which advance watershed stewardship and encourage future participation in community watershed management efforts by all age groups;

Provide specific educational information to watershed residents (including those in Lodi, Clements, Woodbridge, Acampo, Collierville, Victor, Cooper's Corner, Lockeford, Thornton and the surrounding areas), farmers, recreationists, and other stakeholders to encourage implementation of beneficial watershed practices;

Educate watershed visitors on the multiple features of the watershed to promote watershed stewardship by recreational users, economic development within the watershed, and to encourage the expansion of beneficial watershed stewardship programs to other regions;

Encourage coordinated voluntary community efforts by all watershed stakeholders to implement long-range beneficial watershed programs; and

Emphasize implementation of educational programs throughout the community as a primary tool for improving the watershed.

IMPLEMENTATION PROGRAMS:

Residential

1. Continue Distribution and Encourage Implementation of the *Mokelumne River Watershed Owner's Manual*

Continue public outreach and education efforts to expand the implementation of the *Mokelumne River Watershed Owner's Manual* to reduce non-point source pollution created by residential activities within the watershed.

Continue to seek funding to maintain the position of Watershed Coordinator on staff at the San Joaquin County Resource Conservation District to support the ongoing implementation of the *Lower Mokelumne River Watershed Stewardship Plan* and the *Mokelumne River Watershed Owner's Manual.*

Consider sponsorship of a "demonstration day" showcasing local businesses, products and services which homeowners may use to implement watershed best management practices. If feasible, sponsor a booth at local community events, fairs, or home improvement shows where a ready audience is available.

Consider distribution of educational information related to beneficial watershed practices on an ongoing basis. For example, distribute pesticide use guidelines for residential gardeners at local garden centers.

Local newspaper inserts, enclosures in property tax bills and/or enclosures in electric bills should be considered as a primary tool for implementing this educational program and ensuring wide distribution of educational materials.

Consider working with other local agencies (e.g., Agricultural Commissioner's Office, U.C. Cooperative Extension, Lodi-Woodbridge Winegrape Commission) to expand the San Joaquin County Mosquito and Vector Control District's Integrated Pest Management Program for school children to include IPM education for residential, public and other uses.

Time Frame for Implementation: Ongoing. Hold first demonstration day within 3 years of LMSP adoption. Consider community promotion events once every two-tln·ee years after LMSP adoption.

2. **Expand Residential Pesticide Education Programs**

Working with the U.C. Cooperative Extension's recently launched residential pesticide use education program, encourage other agencies to cooperatively formulate an extensive public-outreach program emphasizing best pesticide use management practices for residential homeowners (perhaps targeting homeowner's associations) and public agencies (e.g., maintenance managers at local and county parks, landscape architects).

Time Frame for Implementation: Ongoing.

Agricultural

3. **Promote/Expand Implementation of the *Lodi Winegrower's Workbook***

Promote and support the ongoing implementation of the *Lodi Winegrower's Workbook.* Use the *Lodi Winegrower's Workbook* as a model to formulate similar watershed stewardship education programs encouraging beneficial watershed stewardship practices in other areas of the watershed (e.g., dryland grazing, row and field crop farming, orchard farming, riparian restoration).

Time Frame for Implementation: Ongoing.

4. **Expand Dormant Spray Education Programs to the Mokelumne River Watershed**

Work with the San Joaquin County Agricultural Commissioner's Office to expand its Dormant Spray Education Program to include the Mokelumne River Watershed.

Time Frame for Implementation: Within three years of Plan adoption.

5. **Expand Participation in Agricultural Commissioner's Office-Sponsored Education Programs**

Promote the educational seminars provided by the San Joaquin County Agricultural Commissioner's Office to increase participation in these programs to include more agencies, private landowners and others.

Time Frame for Implementation: Ongoing.

Schools

6. **Promote/Support Existing Educational Programs Available to Local Schools/Advertise Availability of Agriculture in the Class1·oom Program and Other Educational Programs Available to Area Schools/Database**

Promote and support existing educational programs available to area schools including, but not limited to, implementation of the following:

Prepare a centralized database of existing agricultural education programs available within San Joaquin County and make it available to the San Joaquin County Office of Education and/or directly to area schools. The database should describe each program, note the targeted audience/age group and list contacts for each program. The database should be updated fi·equently to reflect new information. This information will be included on the San Joaquin Resource

Conservation District website www.sjcrcd.org with links to related sites. The goal of this program is to advertise the availability of these educational programs to expand their use in the classroom.

Ensure that educational materials produced and/or promoted by the LMSP are made available to the appropriate education programs. Ensure that local students are made aware of voluntary, community-based LMSP programs to encourage participation in these programs by area students

The database and support program should include, at a minimum:

- the San Joaquin Farm Bureau Federation's Agriculture in the Classroom Program and its available resources
- School Aquarium Program
- Mokelumne River Hatchery Tours
- Central Valley Waste Services 2nd/4th grader program
- Future Woodbridge Irrigation District Dam Overlook Site Educational Programs

  San Joaquin County Mosquito and Vector Control District's Integrated Pest Management Program
- Lodi-Woodbridge Winegrape Commission's Trunk Program
- Audubon's Audubon Adventures Program
- Audubon's Science-in-a-Suitcase Program
- Lodi Lake Discovery Center
- Lodi Lake Nature TraiVDocent Program
- City ofLodi Water Conservation Education Program
- City ofLodi's Storm-Drain Detectives Program
- Lodi Teen Lead Program (Lodi Youth Commission)

- Leadership Institute's Adopt-A-Watershed Program (K-12)

Time Frame for Implementation: In conjunction with Plan adoption.

7. **Promote the Implementation of Integrated Pest Management Programs on Local School Campuses**

Work with local schools to design Integrated Pest Management Programs which can be implemented on-site at local school campuses with participation both by maintenance personnel and students (e.g., for school landscaping maintenance, agricultural science programs, landscape architecture and science programs)

Time Frame for Implementation: Commence within 5 years of Plan adoption.

8. **Encourage Watershed-Based High School Senior Projects/ Community Projects**

Coordinate with local science and agriculture faculty at local high schools to encourage consideration of watershed-related issues for senior projects and/or senior community-involvement programs (e.g., organizing clean-up days, habitat improvement, building duck boxes, studying an element of the LWWC Farm Plan, participation in the Storm Drain Detectives program and similar activities)

Time Frame for Implementation: Ongoing, Commence within 2 years of Plan adoption.

9. **Incentives for Higher Education - Scholarship**

Investigate the potential for establishing a scholarship for local high school students interested in pursuing higher education in agriculture, environmental sciences, land use planning, or other watershed-related areas.

Time Frame for Implementation: Within 5 years of Plan adoption.

10. **Encourage Participation in Plan Implementation by Local Colleges**

Coordinate with science and agricultural faculty at local colleges to solicit student participation in watershed-related programs (e.g., conducting ongoing biological surveys and/or monitoring within the watershed; studying LWWC Winegrower's Workbook implementation, and similar programs).

Time Frame for Implementation: Ongoing, Commence within 2 years of Plan adoption.

11. Facilitate Community-Based Opportunities for K-12 Students to Become Involved in the Leadership Institute's Adopt-A-Watershed Program

The Watershed Coordinator will act as a liaison (through direct contacts and/or publications, website) between community groups, organizations and local schools to keep both schools and the community appraised of ongoing watershed programs which provide opportunities for community-based watershed activities through the Leadership Institute's Adopt-A-Watershed Program (e.g., through involvement in EBMUD wildlife surveys, Mokelumne River Partnership projects, SJCRCD programs, Lodi Docent and City ofLodi projects)

Time Frame for Implementation: Ongoing.

Community

12. Support the Lodi Lake Discovery Center

Support the Lodi Lake Discovery Center by promoting partnerships with other community organizations (e.g., Boy Scouts, Girl Scouts, EBMUD, CA Dpt. of Fish and Game, U.S. Fish and Wildlife Service, USDA NRCS, San Joaquin County Resource Conservation District, San Joaquin County Council of Governments etc.) to provide displays and other watershed-based educational materials at the Discovery Center and to increase grant opportunities to enhance funding for educational materials and activities at the Center.

Time Frame for Implementation: Ongoing.

13. Use Existing USDA Natuml Resource Conservation Service Educational Materials

Expand distribution of existing USDA NRCS watershed-based educational materials and publications at watershed education centers (Discovery Center, Hill House Museum, Discover Lodi! Lodi Wine and Visitor's Center, SJCRCD website, and similar locations).

Unless already available, consider adapting the NRCS's "Backyard" educational kit for teachers as a "Backyard Watershed" kit for teachers for distribution at schools and/or to local residents.

Time Frame for Implementation: Ongoing.

14. **Co01·dinate with San Joaquin County Department of Public Works Solid Waste Division- Household Hazardous Waste Management Programs and San Joaquin Farm Bureau Federation to Expand "Pick-up" Programs**

Coordinate with the County's Household Hazardous Waste Management program to design/expand/distribute educational materials and/or household hazardous waste disposaVrecovery programs targeting those non-point source pollutants originating from urban and residential areas which are adversely affecting water quality in the Lower Mokelumne River (See Water Quality Element of the LMSP). Increase the number of hazardous waste pick-up/recovery days provided in the watershed.

Work with San Joaquin County to establish a permanent Roadside Dumping Pick-Up Program targeting the pick-up of discarded mattresses, appliances and other large materials which are frequently found dumped along roadsides and back roads particularly in rural areas.

Support the existing efforts of the San Joaquin Farm Bureau Federation - sponsored chemical pick-up events.

Time Frame for Implementation: Immediately upon adoption of the LMSP.

15. **Water Conservation Program**

Work with local water purveyors to design a water conservation program which is promoted throughout the watershed for multiple uses.

Time Frame for Implementation: Commence within three years of Plan adoption.

16. **Involve Youth Groups**

Enlist the assistance of, or continue to support the ongoing participation of, local youth groups in undertaking beneficial watershed activities (e.g., labeling drains) to expand educational opportunities for youth groups and to encourage a spirit of community volunteerism for watershed stewardship activities.

Time Frame for Implementation: Ongoing.

17. Enlist Civic Groups to Undertake Educational Programs

Contact local civic groups not ah·eady addressed in Program #5 to undertake educational programs for local schools and/or watershed residents emphasizing watershed-related issues (e.g., California Native Plant Society- Plant Education programs).

Time Frame for Implementation: Ongoing, commence coordination activities within 2 years of Plan adoption.

18. Promote Woodbridge Dam Overlook Site

Support the construction of an educational overlook site/fish viewing area at the new Woodbridge Dam. Encourage the Parks Department to host pre-arranged tours for school children and adults to the overlook.

Time Frame for Implementation: Ongoing.

19. Promote and Expand Educational Opportunities at the Hill House Museum

Promote and expand educational opportunities at Lodi's Hill House Museum. Work with the museum to add/sponsor a watershed display which, in addition to promoting the history of the watershed, also investigates the natural and agricultural resources within the watershed.

Time Frame for Implementation: Ongoing. Commen within two years of Plan adoption.

20. Establish Walking Tours Highlighting Cultural Resources

Facilitate the preparation of walking tour brochures for visitors, residents, and students, promoting historic and other cultural resources within the watershed communities ofLodi, Woodbridge, Lockeford, and Clements.

Time Frame for Implementation: Prepare first walking tour brochure within two years of Plan adoption. Complete walking tour brochures for other watershed communities within 10 years of Plan adoption.

Promotion & Outreach

21. Use the SJCRCD Website to Distribute Educational Materials and to

Provide Links with other Local Organization Websites and Programs

Continue to maintain and update a San Joaquin County Resource Conservation District website. Use the website to distribute watershed and other resource-related materials and to provide links with other organization websites and resource management programs.

Time Frame for Implementation: In conjunction with Plan adoption.

22. **Promote Educational Programs/Media Use**

Consider publication of an annual/biannual LMSP community newsletter or equivalent means of expanding educational programs and watershed events throughout the watershed. Consider publication of guest articles in mailers and newsletters of other organizations within the watershed promoting best management practices within the watershed (e.g., chamber of commerce, San Joaquin Farm Bureau Federation, San Joaquin Audubon Society newsletter, SJCRCD website and similar locations). See also Program #21.

Time Frame for Implementation: Ongoing.

23. **Promote Educational Centers throughout the Watershed**

Encourage centers embracing watershed-based education to promote one another. Educational centers within the watershed should acknowledge other educational centers within the watershed through displays, printed materials and/or sinillar outreach. For example, the Wine and Visitor's Center may provide brochures to visitors encouraging visits to the Lodi Lake Discovery Center; the Discovery Center could integrate mention of the Mokelumne River Fish Hatchery in displays concerning the life cycle of salmon, the Hill House Museum could promote historical walking tours in all watershed communities.

Time Frame for Implementation: Ongoing.

24. **Use the San Joaquin County Fail·and Other Community Events to Promote Watershed Education**

Consider the addition of activities at the County Fair which might be used for education (e.g., workshops for teachers could be provided and/or they could enter things at the fair such as agricultural commodities, organize a booth at the fair or combine forces with another agency to man a booth at the fair to distribute

watershed educational materials).

Continue to take advantage of community events within the watershed (e.g., Youth Group events, Sandhill Crane Festival, Salmon Festival, Grape Festival, Asparagus Festival) to promote watershed education by providing educational materials related to watershed management at booths.

Time Frame for Implementation: Ongoing.

25. **Establish a Watershed Speaker's Bureau**

Establish a list/clearinghouse of willing speaker's available to discuss watershed issues at public presentations for local schools and civic groups. Notify local community groups and other interested stakeholders of the availability of these speakers.

Time Frame for Implementation: Ongoing. Establish list within one year of LMSP approval.

26. **Promote Watershed Education at LocaVCounty Parks**

Identify local and county parks where educational opportunities are being underutilized. Work with the County Department of Parks and Recreation and City Parks and Recreation to facilitate the development of watershed educational programs and materials (e.g., interpretive programs/hikes, dioramas, kiosks etc.) at local and county parks.

Time Frame for Implementation: Commence within three years of Plan adoption.

27. **Continue to Distribute Educational LMR Watershed Video:** *Reflections in the River*

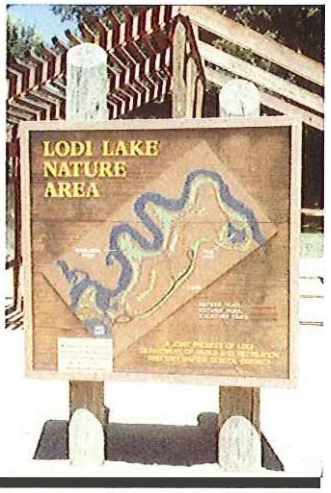
The LMSP Steering Committee has prepared an educational video, *Reflections in the River,* for distribution to area schools and community organizations emphasizing the components of and interrelationships within the Lower Mokelumne River watershed, in particular, the control of non-point source pollution. This video may be used separately or in conjunction with the *Mokelumne River Watershed Owner's Manual* (see program #1). Ordering information for this video is found at the beginning of the LMSP and on the San Joaquin County Resource Conservation District website www.sjcrcd.org.

Time Frame for Implementation: In conjunction with Plan adoption.

28. **Promote "Discover Lodi!" Lodi Wine and Visitor's Center**

Promote and support "Discover Lodi!" Lodi Wine and Visitor's Center as a primary educational center for watershed issues related to the winegrape industry. Include watershed-based educational materials and, if appropriate, displays focusing on integration of the winegrape industry with other components of the watershed. Consider sponsorship of a Lower Mokelumne River Watershed display/information site at the center promoting the LMSP and other centers offering watershed-based education within the Lower Mokelumne River Watershed.

Time Frame for Implementation: Ongoing.



3. RECREATION

BACKGROUND

The City of Lodi General Plan Background report states: "The Mokelumne River is an underutilized recreational resource with little public access." Public access is limited because the majority of land along the Mokelumne River is in private ownership and prohibits trespass.

The San Joaquin County General Plan designates the entire lower Mokelumne River from Camanche Dam to the Mokelumne-Cosumnes confluence as a significant resource area for recreation. The San Joaquin County General Plan also identifies the following recreational activities as being provided by the Mokelumne River: fishing, rafting and tubing, canoeing and nature study.

Lodi Lake

RECREATIONAL USE TRENDS

Park use was last assessed in San Joaquin County in 1981. Recreation use data has not been updated for San Joaquin County as of April, 2002. According to the San Joaquin County Department of Parks and Recreation, there are no current plans to update the 1981 study which was used in the county's general planning process. However, a comparison of the most popular (i.e., largest number of use days annually spent participating) recreational activities enjoyed in San Joaquin County in 1981 compared with those recorded in a 1997 statewide recreational survey, indicate that trends in the popularity of many recreational activities since 1981 have not changed drastically.

Comparison of the Popularity of Recreational Activities San Joaquin County (1981) and the State of California (1997) Based on Participation Days Annually (in order of popularity)

Most Popular San Joaquin County Recreational Activities - 1981 *San Joaquin County Park Use and Recreation Activity,* November, 1981- Prepared for the San Joaquin County Conununity Development Dpt.	Most Popular Statewide Recreational Activities 1997 California Department of Parks and Recreation *Public opinions and Attitudes on Outdoor Recreation in Califomia*
Walking	Walking
Swimming	Driving for pleasure
Jogging/running	Use of open grass or turf areas casual and unstructured activities like games, sitting, sunning
Pleasure driving, sightseeing	
Team spm1s	
Horseback riding	Bicycling on paved surfaces
Bicycling	Jogging and running
Tennis	Swimming (outdoor pools)
Fishing	Beach activities including sunning and games
Nature Study	Trail hiking
Golf	Use of play equipment, tot lots
Boating	Swiunning (lakes, rivers, and ocean- not in pools)
	Picnicking in developed sites

EXISTING RECREATIONAL FACILITIES

The following recreational facilities exist within the lower Mokelumne River watershed as of April, 2002:

Privately Owned or Operated Facilities
Within the LMR Watershed Botmdaries

Facility	Location
Cal-Skate	512 N. Cherokee, Locli
Forest Lake Golf Course	2450 E. Woodson, Acampo
Golden Eagle Aviation, Sightseeing Tours	23987 Hwy. 99, Acampo
Lodi Airport Parachute Center	23597 Hwy. 99, Acampo
Mokelumne Beach Resort RV Park	18450 N. Hwy. 99 (Turner Rd. exit), Lodi
Mojicas Indoor Batting Cages	125 E. Elm, Lodi
Parkins Park (3.4 acres)	Victor
To Your Health SlJ_a	920 S. Cherokee, Lodi
Tokay Bowl	620 S. Cherokee, Lodi
Tokay Players (Theatre)	972 Woodrow, Lodi
Woodbridge Golf & Country Club	Woodbridge Rd., Woodbridge

Woodbridge Golf & Country Club

City of Lodi Parks Located Within Watershed

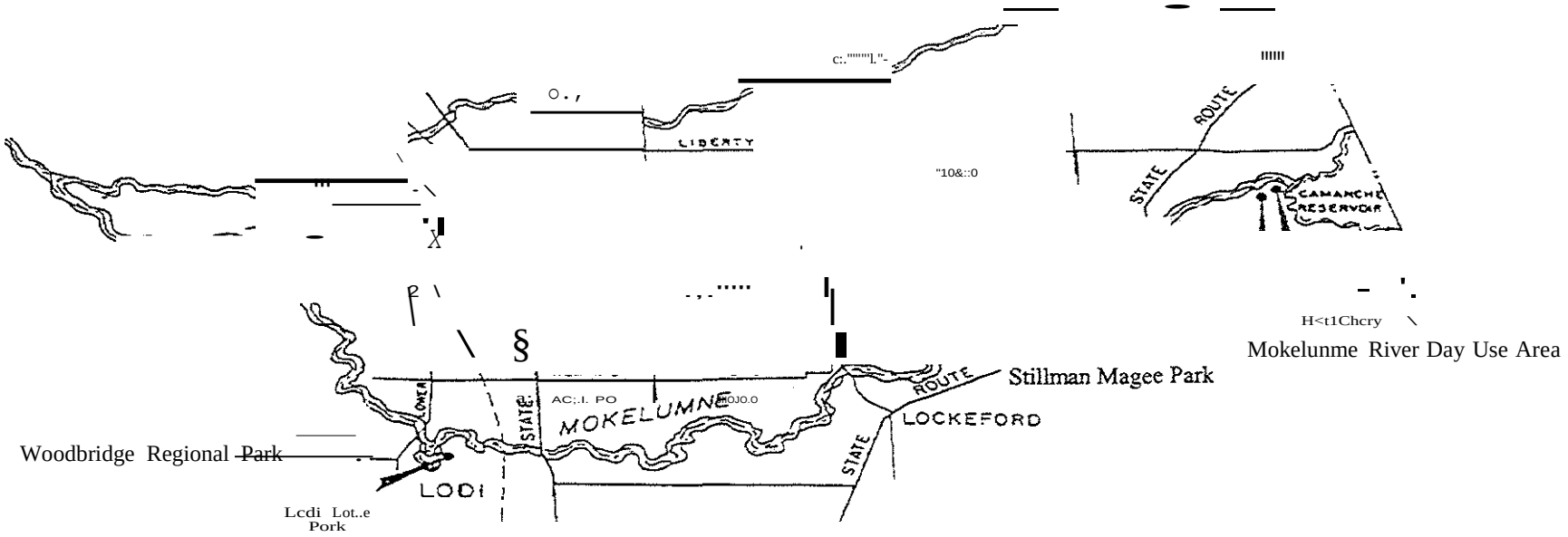
Park Name	Park Acres	Park Features
Armory Park (Chapman Field)	3.2	Softball diamond, restrooms, concession stand
Candy Cane Park (aka Kandy Kane Park)	.2	Playground Area, picnic facilities
Grape Bowl	15.0	Football field, soccer field, 2 softball diamonds, field house, concession stand, restroorns,
Hale Park	3.1	Basketball courts, horseshoe pits, meeting room, restrooms, play equipment, group picnic facilities, par course
Henry Glaves, Jr. Park	14.0	Soccer field, playground, restrooms, par course, picnic tables
Katzakian Park	5.0	Basketball court, tee ball field, restrooms, picnic shelter, play equipment
Lawrence Park	2.8	Group picnic area, play equipment, restrooms, dog exercise area
Lodi Lake Central Park Area (43 ac) Lodi Lake Nature Area (58 Ac)	101.0	25-acre lake, beach, Discovery Center, group picnic area, amphitheater, accommodations for recreational vehicles and trailers, playgrounds, concession stand, restrooms; Nature Area with trails, dog exercise area
Lodi Park West (1101 W. Turner)	13.0	Undeveloped
Peterson (aka Westgate) Park	22.0	Tennis courts, basketball court, in-line hockey court, two playground areas, practice diamonds, soccer fields, restrooms
Pixley Park	27.0	Landing strip for remote control planes and handline area. Park mostly undeveloped.
Softball Complex (Stockton and Lawrence Streets)	7.6	2 Softball diamonds, concession stand, restrooms
Van Buskirk Park	1.0	Horseshoe pit; basketball half-court, play equipment, picnic tables
Zupo Hardball Park	3.2	Baseball diamond, batting cage, concession stand, restrooms, press box.
Total Acres	218.1	

Lower Mokelumne River Watershed Schools with Recreational Facilities
Clements School
Heritage School (formerly Garfield)
Houston School (Acampo)
Lakewood School
Lawrence School See Grape Bowl
Lodi Academy High School
Lodi Adult School (formerly Lincoln)
Lodi 7th Day Adventist School
Mokelumne River School (s. ofWoodbridge/99)
Oak View School (Collier & Dustin)
St. Peter School (Adj. to Glaves Park)
Woodbridge Middle School

County and Quasi-Public Parks

Park Name	Park Acres	Facilities
Mokelumne River Day Use Area	259.0	picnicking, trails, fishing, rafting
Mokelumne River Day Use Area (aka John Van Assen Park)	47.0	Ave. visitorship 20-25,000 annually has reached 60,000 in **some years; picnicking, trails, fishing, rafting, swimming,** camping
Stillman Magee Park	20.0	Picnicking, fishing, rafting
Woodbridge Regional Park	15.0	natural area
Harmony Grove	1.0	Meeting room, historical church
Woodbridge Tot Lot	1.3	Neighborhood park, provides tot lot
Total Acres	343.3	

Mokelumne River Public and Quasi-Public Parks
Adjacent to the Lower Mokelumne River



LOCAL AGENCY OR GROUP-PLANNED OR RECOMMENDED RECREATIONAL FACILITIES

City of Lodi Park Recreation Standards and Funding: The Lodi General Plan establishes a standard of 10.0 acres of neighborhood and community parklands per 1,000 population (including school parks and storm drainage detention basin parks) and 4.2 acres of neighborhood and community parklands per 1,000 population (excluding school parks and storm drainage detention basin parks). The General Plan calls for the assessment of a park development fee on all new residential, commercial, office and industrial development sufficient to fund the acquisition of parklands consistent with the General Plan=s established standard.

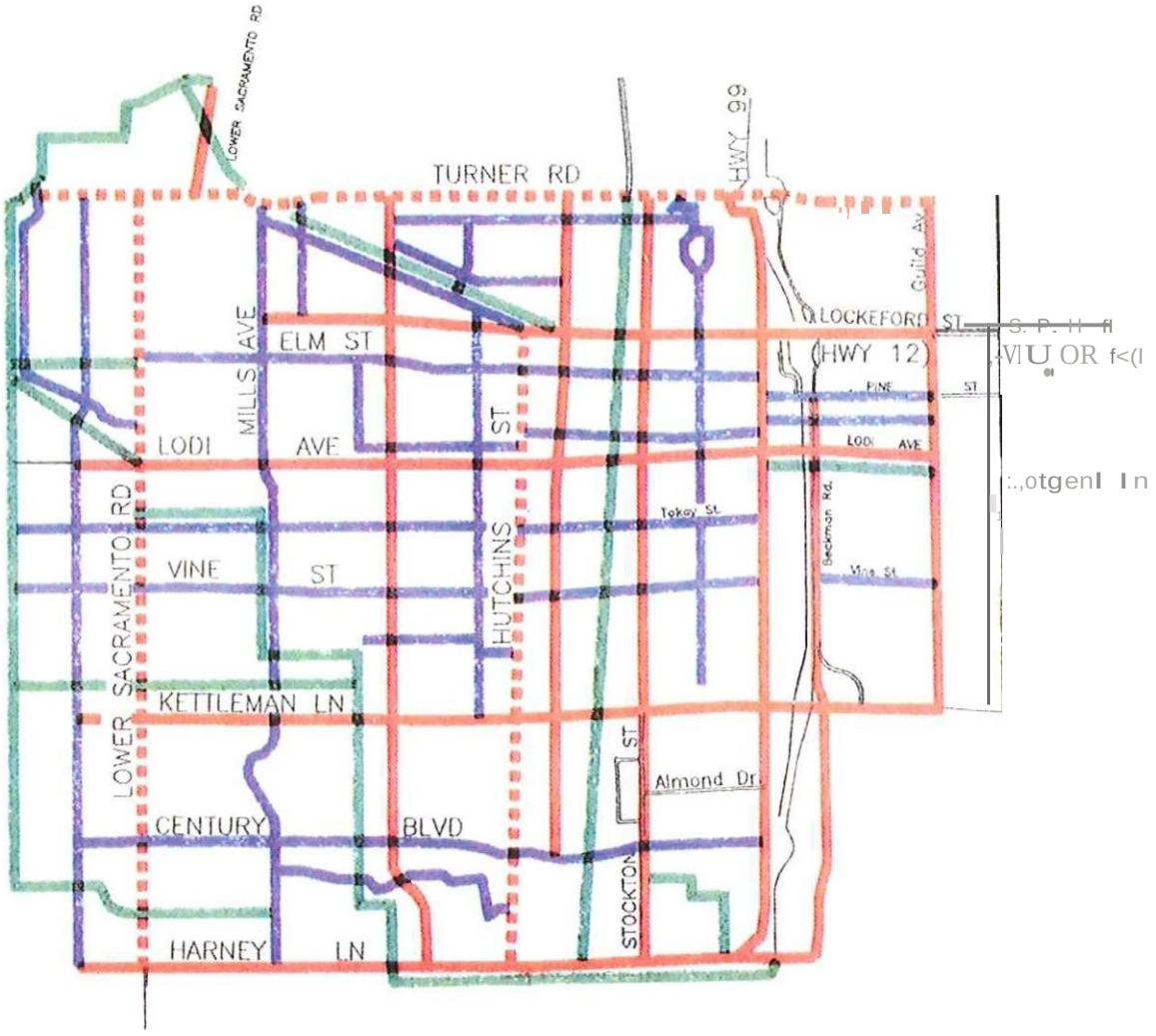
Mokelumne River Parkway Corridor: The City of Lodi General Plan calls for the City to consider the establishment of a parkway corridor along the north side of the Mokelumne River. No boundaries for the parkway corridor have been established. The parkway corridor is intended to provide additional recreational opportunities to Lodi residents, protecting sensitive habitat along the river, and providing additional public access to the river. The General Plan calls for preparation of a state/county study to evaluate the potential need for a parkway corridor along the Mokelumne River.

County General Plan: The San Joaquin County General Plan Recreation Element identifies the need for 4,000 acres of additional parkland by the year 2010 to serve its residents. The plan recommends 10 acres of parkland per 1,000 population for regional parks and 3 acres/1,000 population for local parks. Policy 15 of the element states that the recreational values of ...the Mokelumne River..shall be protected. Policy 13 states that recreational use of the County's waterways will be supported and the County shall ensure adequate public access to waterways at selected locations. Implementation Program I(f) states that the County shall pursue the acquisition of conservation easement for preservation of riparian vegetation along the Mokelumne River, and study the feasibility of additional public recreational areas on the river.

Hiking Trails - Planned: Numerous hiking trails are planned within the watershed. The San Joaquin County General Plan Technical Appendices state that a major deficiency in the county's recreation system "is the lack of trails for hikers, cyclists and horseback riders." The plan cites Mokelumne River Canoe Trail as one of seven county trail systems planned in the county.

Bike Trails: The San Joaquin County Council of Governments is currently updating the county's planned regional bike trail system. Planned bike routes within the watershed follow:

PROPOSED CITY OF LODI
ICYCLE MASTER PLAN IMPROVEMENT



LEGEND

CLASS (BICYCLE PATH)
CLASS II (BICYCLE LANE)
CLASS III (BICYCLE ROUTE}
LOCAL IMPROVEMENT OF "REGIONAL" SIGNIFICANCE

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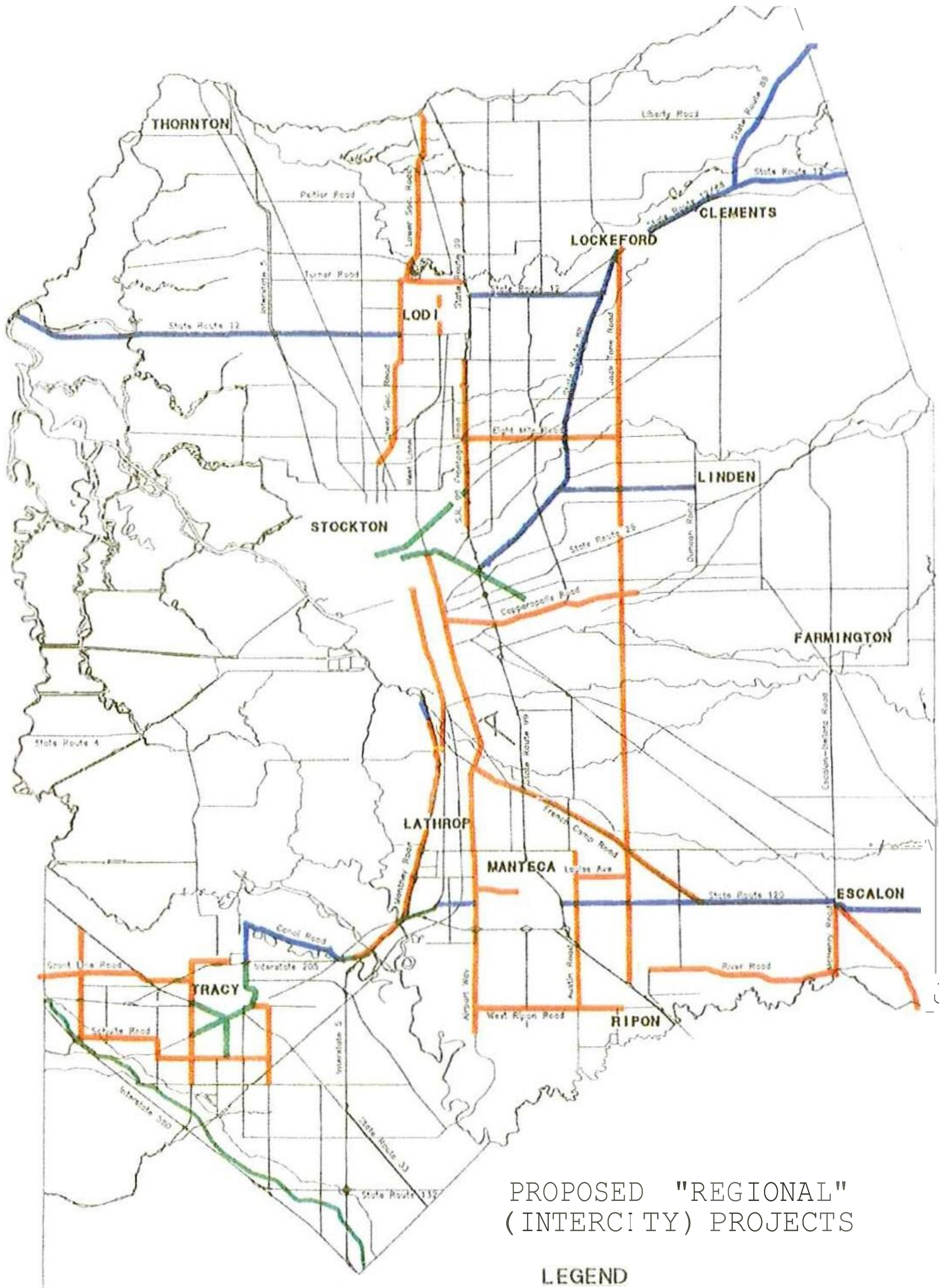

PROPOSED "REGIONAL"
(INTERCI TY) PROJECTS

LEGEND

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CLASS II (BICYCLE LA E)
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GOALS

When achieving these goals, we must remember that all of the constituents of the Lower Mokelumne River Watershed are interrelated and that good stewardship is ensuring support and maintenance for all beneficial uses of the Mokelumne River.

- Improve management of existing public access points along the Mokelumne River;
- Increase the number of managed public access points to recreational facilities along the Mokelumne River to reduce trespassing through private property;
- Manage access points to decrease erosion along banks and to encourage other beneficial uses of waterways for county residents and visitors;
- Promote existing and establish new recreational opportunities within the watershed for county residents and visitors to promote economic development of the watershed region;
- Encourage the development of educational recreation programs throughout the watershed to promote appreciation for the watershed and to encourage ongoing watershed stewardship; and
- Promote existing and establish new recreational opportunities within the watershed for county residents and visitors to encourage ongoing watershed stewardship by recreational users within the watershed.

IMPLEMENTATION PROGRAMS:

1. Support Efforts to Maximize the Use of Existing Public Access Points

Support efforts to maximize the use of existing public access points along the Lower Mokelumne River that conserve river resources and protect private property rights. Support activities may include, but are not limited to:

- Preparing and distributing public access point maps for rafters including approxinmte mileage and estimated tin1e intervals between access points,
- Expanding the availability of maps at all public access points along the river,
- Increasing directional signage directing the public to public access points along the river from Highway 12 and other major public roadways,
- Installing interpretive signs at all public access points along the river illustrating

public access points along the river including mileage and anticipated tin1e between access points,

- J Including public access maps on www.sjcrcd.org,
- J Supporting funding proposals to increase patrols and clean-up and expansion of visitor-serving facilities at existing access points (e.g., picnic facilities, bathrooms, parking) and similar activities.

Time Frame for Implementation:

- Post access point map on website within one year of plan adoption.
- Support installation of at least five new access directional signs or interepretive signs within five years of plan adoption.
- Facilitate publication of a public handout map indicating public access points within five years of plan adoption.
- Other activities: Ongoing.

2. Promote Shuttle Bus Linkages Between River Access Sites

Expand existing public transportation facilities to include transportation shuttles between river access points to shuttle river users (especially those using kayaks, canoes and even bike trails) between input and output/start fmish sites.

Time Frame for Implementation: Ongoing.

3. Support Studies Aimed at Determining the Level of Recreational River Use and Assessing Recreational Needs

Support efforts to study the existing level of recreational use along the Lower Mokelunme River including recreational needs assessments which address the sufficiency of public access and trails along the Lower Mokelunme River. Assistance activities may include, but are not limited to:

- J Assisting with grant preparation,
- J Identifying funding sources for studies;
- J Assisting with preparing scope of work for studies,
- J Identifying interested stakeholders including landowners, community organizations and similar activities.

Time Frame for Implementation: Facilitate the start of a recreational needs assessment of the Lower Mokelumne within five years of plan adoption.

4. Increase Recreational Opportunities for Residents- Public Swimming Pools

Pursue and support the development of widely accessible public swimming pools.

Time Frame for Implementation: Within 7-10 years ofLMSP adoption.

5. **Promote Economic Development through Recreation**

Promote (through advertising, Chamber of Commerce, Visitor=s Centers, Travel magazine, and similar activities) the recreational opportunities for tourists to San Joaquin County and the linkages between recreation and businesses in the area (e.g., Bed and Breakfast Establishments and wineries/kayak river trips/antique stores/birder's trails, bicycle trails and sports supply stores, hiking trails and local restaurants, aerial tours and related activities)

Time Frame for Implementation: Promote and advocate advertising campaigns within two years ofLMSP adoption

6. **Support and Provide Leadership to Establish Community and Regional Parks within the Watershed and to Ensure Implementation of the County and City of Lodi General Plan Recreation Elements**

Support city and county planners and other civic organizations in their attempts to establish regional parks and other recreational facilities within the watershed (e.g., through letter-writing campaigns, assistance with grant applications, negotiations with landowners or public agencies etc.). Opportunities currently cited in local plans include establishment of the Mokelumne River Canoe Trail, establishment of a shuttle bus system for kayak/canoe users on the Mokelumne (between Stillman Magee and Mokelumne River Day Use Area), and similar facilities.

Time Frame for Implementation: Ongoing.

7. **Promote Recreational Education Opportunities**

Encourage the development of educational/recreation opportunities, such as the Discovery Center at Lodi Lake, by providing grant writing assistance, assisting in forming grant partnerships, advertising the availability of the programs through the LMSP website to local schools, and similar activities.

Time Frame for Implementation: Ongoing.

Chapter 4 Agriculture

BACKGROUND

Agriculture is important to San Joaquin County's economy, a report from 2018 indicates it represents 7.1% of the county's total economic output, generating $5.732 billion when production, processing, multiplier effects and employment are considered[1]• San Joaquin County is ranked 7th overall in agricultural production for California counties and is ranked first for walnut production[2].

Figure 4. 1 Walnut orchard in early spring with robust cover crop in the Lower Mokelumne Watershed. Photo. Margaret Smither-Kopperl.

According to the *2019 Agricultural Report-San Joaquin County* (San Joaquin County Agricultural Commissioner's Office), the gross value of agricultural products in all of San Joaquin County is estimated at $2,617,816,000. Approximately 86% (772,762 acres) of San Joaquin County's 895,640 acres is farmland. There are approximately 3,430 farms in San Joaquin County averaging 225 acres in size, with 36 organic farms and 3,000 certified organic acres[3].

Data from April 2021 found that 13,300 persons (5.1% of the county's total employment) were involved in on-farm employment.[4] Countywide in 2018, there were 29,986 direct employees working in agriculture. Another 3,751 additional jobs were attributable to the multiplier effects from expenditures by agricultural companies and their employees, such as purchases of vehicles, fuel, seeds, insurance and other items[1].

San Joaquin County is a leader in producing many agricultural products and several changes have occurred over the past twenty years. In 2000, San Joaquin County ranked first in California for production of cherries, asparagus, grain corn, apples, English walnuts, and dry beans, second for production of fresh tomatoes, safflower, potatoes, and cucumbers and third for sugar beets and processing tomatoes. In 2019 the county was still ranked first for cherries, grain corn and English walnuts, second for potato production and third for apples and dry beans[2].

The top ten agricultural products for San Joaquin County from 2000 to 2019 are shown in Table 4.1. Over this period production of milk, grapes and walnuts consistently ranks the highly, as does apples and cherries. The highest value crop in 2019 was almonds, although San Joaquin County only ranked as the fifth largest county in a statewide comparison[2]. As a combined group, fruit and nut crops were the largest with a combined value of $1,355 million[3]. The largest increase over the past ten years has been in poultry production with San Joaquin County ranking first for egg production and third for chickens. Overall, San Joaquin County has experienced an increase in permanent crops and a decrease in vegetable and seed production

Table 4.1. Comparison of Crop Values in San Joaquin County from 2010 to 2019.

Crop	2000	2000	2010	2010	2019	2019
	Value $million	County Ranking	Value $million	County Ranking	Value $million	County Ranking
Almonds	87.3	4	156.8	5	449.6	1
Milk	238	2	341.4	1	378.8	2
Grapes (All)	297	1	249	2	372.5	3
Walnuts, English	59.2	6	207.2	3	290.3	4
Eggs, chickens (All)					160.3	5
Cattle and calves			60.2	7	102.6	6
Tomatoes (All)	96	3	115.7	6	88.4	7
Cherries	82.2	5	184.5	4	88.1	8
Blueberries					61	9
Hay (All)	41.3	8	59.7	8	56.1	10
Apples	33.9	9	52.1	9		
Silage Corn			48.4	10		
Asparagus	57.8	7				
Woody Ornamentals	30.2	10				

Values from 2 and 3

Figure 4-1

Estimated Agricultural Land Uses of theLower Mokelumne River Watershed

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[1]Goldeen, Joe. 2020. Agriculture generates 5.7 billion for SJ County economy. The Record, Stockton, CA https://www.recordnet.com/story/news/politics/county/2020/07/07/agriculture-generates-57-billion-for-sj-county-economy/112692076/

[2]California Department of Food and Agriculture. California Agricultural Statistics Review 2019-2020. https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf

[3]San Joaquin County Crop Report 2019 Life of a Crop. The San Joaquin County Agricultural Commissioner's Office. https://www.sjgov.org/department/agcomm/crop_reports

[4]Employment Development Department, State of California. 2021. https://www.labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSMoreResult.asp?viewAll=&viewAllUS=&currentPage=&currentPageUS=&sortUp=&sortDown=C.PERIODYEAR&criteria=current+employment+statistics+%28ces%29&categoryType=employment&geogArea=0604000077&timeseries=&more=More&menuChoice=localAreaPro&printerFriendly=&BackHistory=-9&goTOPageText=

AGRICULTURAL EDUCATION/STEWARDSHP PARTNERS

- CARCD California Association of Resource Conservation Districts – https://carcd.org/
    - Farm Demonstration Network - https://carcd.org/our-work/project/california-farm-demonstration-network/
- CDFA –California Department of Food and Agriculture – OEFI Office of Environmental Farming and Innovation https://www.cdfa.ca.gov/oefi/
    - AMMP Alternative Manure Management Program https://www.cdfa.ca.gov/oefi/AMMP/
    - HSP Healthy Soils Program https://www.cdfa.ca.gov/healthysoils/
    - SWEEP State Water Efficiency and Enhancement Program https://www.cdfa.ca.gov/oefi/sweep/
- San Joaquin County Agricultural Commissioner's Office https://www.sjgov.org/department/agcomm/
- San Joaquin Farm Bureau https://sjfb.org/
- SJCRCD San Joaquin County Resource Conservation District http://www.sjcrcd.com/
- UCCE University of California Cooperative Extension, San Joaquin County http://cesanjoaquin.ucanr.edu/
- USDA NRCS Natural Resources Conservation Service California https://www.nrcs.usda.gov/wps/portal/nrcs/site/ca/home/
    - CSP Conservation Stewardship Program https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/programs/financial/csp/?cid=nrcseprd331032
    - EQIP Environmental Quality Incentives Program https://www.nrcs.usda.gov/wps/portal/nrcs/main/ca/programs/financial/eqip/

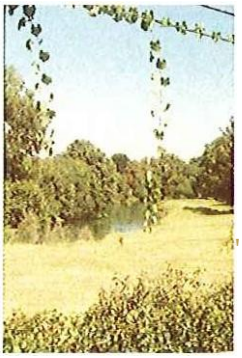
Non Profits

- American Farmland Trust https://farmland.org/
- CA Dairy Quality Assurance Program https://cdrf.org/home/checkoff-investments/cdqap/
- CAFF Community Alliance with Family Farmers: https://www.caff.org/
- CCA California Cattleman's Association https://calcattlemen.org/
- Lodi Winegrowers https://www.lodigrowers.com/
- NCAT National Center for Appropriate Technology, Davis https://www.ncat.org/california/
- Project Apis M. https://www.projectapism.org/seeds-for-bees.html
- SARE- Sustainable Agriculture Research and Education Program. UCANR https://sarep.ucdavis.edu/
- Sustainable Conservation https://suscon.org/
- Xerces Society https://xerces.org/

GOALS Need to Brainstorm these.

- Increase understanding and awareness of agricultural water quality within the Mokelumne Watershed; (Expand to include soils etc.?)
- Enhance water quality protection by implementing a "Tier One[5]" (i.e., non-regulatory, self-derived) water quality program for agricultural producers in the Mokelumne River Watershed; (Is this moot?)
- Encourage voluntary, self-directed and economically feasible practices to promote resource conservation within the Mokelumne Watershed; and
- Retain and enhance the economic viability of agriculture within the watershed.

5. Biological Resources



BACKGROUND

Existing Biological Resources: A list of the special status plants, fish and animals known to occur or expected to occur within the Lower Mokelumne River Watershed is included in Table 5-B.

Vegetation Types: A list of the plant, fish and wildlife habitats found within the Lower Mokelumne River Watershed is included in Table 5-A. Habitat types are classified pursuant to the California Wildlife Habitat Relationships System (CWHR), as described in *A Guide to Wildlife Habitats of Califomia* (Mayer and Laudenslayer, CDFG, 1988) and its supplements.

EXISTING BIOLOGICAL RESOURCES MANAGEMENT PROGRAMS:

Woodbridge Irrigation District (WID) & the City of Lodi Lower Mokelumne River Restoration Program: WID and the City of Lodi are implementing the Lower Mokelunme River Restoration Program. The goal of the project is to improve fish passage while maintaining WID's Mokelumne River water rights. The program has undertaken environmental and engineering studies and proposes to improve fish passage and monitoring at Woodbridge Dam, replace fish screens at WID and North San Joaquin diversions, and implement riparian corridor improvements. The program intends to restore 200 acres of riparian habitat.

East Bay Municipal Utility District's (EBMUD) Lower Mokelumne River Project Joint Settlement Agreement and Water Quality and Resource Management Program: The Joint Settlement Agreement (Agreement) and Water Quality Resource Management Program (WQRMP) are coordinated by EBMUD pursuant to the Federal Energy Regulatory 1998 Order Amending the License for EBMUD's Lower Mokelumne River Project. The Agreement is among EBMUD, the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG).

Under the terms of the Agreement, EBMUD, USFWS and CDFG have established the Lower Mokelumne River Partnership with the following objectives:

- ../ Protection and enhancement of anadromous fisheries
- ../ Protection and improvement of the Mokelumne River ecosystem
- ../ Encouragement of stakeholder participation and cooperation
- ../ Integration of Mokelumne River strategies with the Bay-Delta Accord, Central Valley Project Improvement Act implementation and similar measures.

../ The Agreement specifies minimum flow releases downstream of Camanche Dam and commits to ecosystem protection and enhancement. Under the direction of the WQRMP, EBMUD is conducting surveys of fish, amphibians, reptiles, birds and mammals as well as mapping vegetation and aquatic communities. The Partnership has established a fund to support implementation of the Partnership objectives.

San Joaquin Council of Governments (COG) Multi-Species Habitat Conservation and Open Space Plan (SJMSCP): COG has been overseeing the preparation of a countywide habitat conservation and open space plan since February, 1994. The plan went into effect with the issuance of permits by the U.S. Fish and Wildlife Service and the California Department of Fish and Game on July 13, 2001. The plan anticipates acquiring lands through easement and fee-title purchase for the management of biological resources to offset the impacts to these resources associated with development activities within the county=s seven cities and within San Joaquin County itself. The program is anticipated to acquire approximately 100,841 acres of land for biological management purposes from willing sellers for the management of 97 covered species through the year 2051. The program intends for existing agricultural practices on lands currently under agricultural production to continue within Preserves.

San Joaquin Resource Conservation District (RCD)- Vernal Pool/Agriculture Education & Demonstration Program, Neotropical Migratory Bird Monitoring, & Riparian Restoration Program: The RCD is working with the Central Valley Project Improvement Act (CVPIA) and others to acquire vernal pool grasslands for the purposes of demonstrating economically viable agriculture in a vernal pool environment.

Working through the Lower Mokelumne River (LMR) Partnership Fund, the RCD also is overseeing Swainson's hawk surveys within the Lower Mokelumne River Watershed.

Also working through the Lower Mokelumne River (LMR) Partnership Fund, the RCD is undertaking a riparian restoration program at the Natural Resources Conservation Service's Plant Materials Facility (approximately 106 acres) located on the Mokelumne River west of Elliot Road.

Central Valley Project Improvement Act/Anadromous Fish Restoration Plan: The Central Valley Project Improvement Act (CVPIA) of 1992 [Section 3405(b)(l)] directed the Secretary of the Interior to develop and implement a program which makes all reasonable efforts to double natural production of anadromous fish in Central Valley rivers and streams by 2002. In response, the U.S. Fish and Wildlife Service prepared the Anadromous Fish Restoration Program Plan (AFRP). The plan identifies multiple anaclromous fish habitat deficiencies in each tributary of the Central Valley of California including the Mokelumne River system.

The AFRP, combined with the CVPIA Restoration Fund, affords the opportunity to provide funding for habitat improvement actions. The AFRP effort includes a process to collaborate with other agencies, organizations and the public by augmenting and assisting restoration efforts presently conducted or proposed by local watershed groups, CDFG, and others to increase natural production of anadromous fish in the Central Valley.

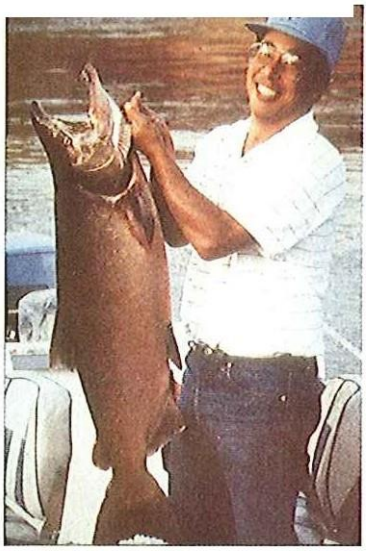
Multi-Agency/U.S. Army Corps of Engineers (ACE) Mokelumne River Feasibility Study: EBMUD is working with the ACE to evaluate potential ecosystem restoration and non-traditional flood damage reduction methods in the Mokelumne River flood plain fi·om Woodbridge Dam to the confluence of the San Joaquin River. Restoration measures include breaching levees and restoring habitats through plantings and other natural revegetation efforts. Measures will be designed in cooperation with landowners and other water users to protect private property rights, water rights and the economic viability of land.

Lodi-Woodbridge Winegrape Commission (LWWC): LWWC has produced the *Lodi Winegrower's Workbook* (please refer to the Education Element for a more detailed description). This self-assessment guide to integrated farming practices includes a habitat component which sites the benefits of biological resources in integrated farming practices. These benefits include control of animal pests (e.g., by raptors and other birds of prey), control of insect pests, reducing erosion, providing ftlters to in1prove water quality and "...the presence of wildlife and diverse habitats in and around vineyards adds quality to the experience of anyone touring the Lodi region. As the LWWC district matures, wine tourism is bound to become an important aspect of wmegrape growmg."

The workbook includes recommendations for farming practices which can assist farmers in realizing the benefits of managed biological resources and avoiding practices that could increase threats to farming practices (e.g., retaining oaks to reduce the potential for *Armillaria* root rot on grape vines). The workbook also provides information on funding sources which can assist in implementation of biological resources-fi·iendly farming practices [e.g., Wildlife Habitat Incentive Program (WHIP) and the Environmental Quality Incentives Program (EQIP) offered through the Natural Resources Conservation Service (NRCS)].

GOALS:

Witen acl!ie1•ing these goals, we must remember that all of the constituents of the Lower Mokelumne Ri1•er Waters/ted arc iuterrelated aud that good stewardship is ensuring support and maintenance for all beneficial uses of the Mokelumne River.



- ./ Maintain and, where possible, improve the quality and quantity of biological resources in the watershed;
- ./ Increase educational opportunities through the study of biological resources;
- ./ Support existing biological resources education programs; and
- ./ Encourage conservation of biological resources and habitats.

IMPLEMENTATION PROGRAMS:

1. Promote Improvement of Spawning Habitat for Salmon and Steell1ead

   Implement a public outreach program to identify additional landowners along the Mokelumne River willing to provide access to the Mokelumne River for gravel restoration projects (e.g., those being undertaken by EBMUD, USFWS and CDFG) for improvement of salmon spawning habitat.
   Time Frame for Implementation: Begin within 2 years of adopting LMSP.

2. <u>Support a Study of Salmon and Steelhead Survival Rates in the Lower Mokelumne</u>

   Promote and support undertaking a study(ies) using sound science and accounting that shows passage rates of salmon and steelhead through the Lower Mokelumne River and which investigate the improvement or implementation of measures proven to improve passage rates.
   Time Frame for Implementation: Ongoing.

3. <u>Support Surveys</u>

   Support the efforts of landowners and groups undertaking studies to evaluate the distribution, populations and habitat use patterns of species within the watershed by working with these groups to gain permission from landowners to enter private property to conduct surveys. All access to land for such surveys and/or studies shall require authorization by the landowner. Discuss potential uses of data with landowners and,

when willing, work with landowners to use data to identify opportunities for restoration and habitat protection efforts while protecting property rights.
Time Frame for Implementation: Ongoing.

4. **Promote and Encourage Landowner Participation in Lowe1·Mokelumne River Riparian Restoration Projects**

Support riparian restoration efforts of groups including the Woodbridge Irrigation District (WID), the City ofLodi, the Lower Mokelumne River Partnership, the USDA Natural Resources Conservation Service and others. These groups are undertaking riparian restoration efforts including the Lower Mokelumne River Restoration Program and the Natural Resources Conservation Service Plant Materials Center Riparian Restoration Project. Wherever feasible, enlist community volunteers to assist in these programs to gain knowledge and support of and for the watershed program. Consider involving local schools in the efforts to expand educational opportunities.
Time Frame for Implementation: Ongoing.

5. **Identify Opportunities for Coordination with the San Joaquin County's County-Wide Habitat Conservation Plan**

Inform interested landowners of opportunities for selling easements for management of biological resources. Where feasible, such efforts should coordinate with those of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) to reduce the overall costs of land management and restoration so long as such efforts protect private property rights, do not contribute to the removal of productive agricultural lands and protect neighboring properties.

Time Frame for Implementation: Ongoing.

6. **Provide Representation from the LMSP to the Tri-County Weed Management Area Committee to Foster Control of Non-Native Invasive Species**

Provide representation fi·om the LMSP to the Tri-County Weed Management Area Committee to foster control of non-native invasive species which reduce biological resource values. Work in cooperation with the County Agricultural Commissioner's Office and the Natural Resources Conservation Service. WMA's require:

- The definition of a management area (which may be a watershed),
- Involvement of stakeholders,
- Organization of a steering committee,

- Development of a memorandum of understanding,
- Identification of problems, and
- Development of weed control projects (e.g., mapping, eradication).

Include, where feasible in this program, provisions for replacing non-native inVasive species through (re) establishing native plants along the river, tributaries and uplands of the watershed.

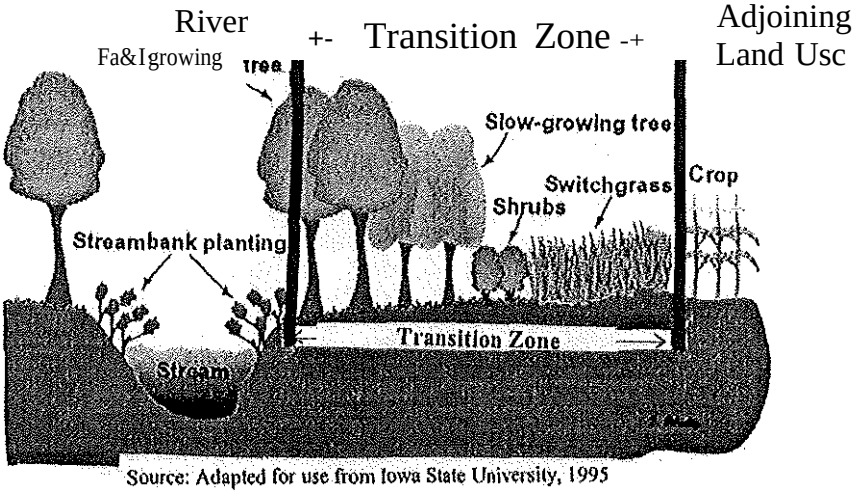
Time Frame for Implementation: Begin within Z years of adopting LMSP.

7. Support the RCD's Vernal Pool/Agriculture Education & Demonstrntion Program

Support the RCD's planned vernal pool/agriculture education & demonstration program intended to test alternative methods of maintaining economically viable agriculture in a vemal pool setting.

Time Frame for Implementation: Ongoing after commencement of the demonstration program anticipated to begin in late 2004.

8. Encourage Establishment of a Voluntary "River-Adjoining-Land Usc" Transition Zone Program



Source: Adapted for use from Iowa State University, 1995

Biological Resources

Encourage management of transition zones to increase the quantity and quality of biological resources along the river and to provide flood control/runoff areas to help ease flood concerns.

Transition zones are those areas which separate the Mokelumne River from adjoining land uses (e.g., river-residential, river-urban, or river-agricultural).

Assist interested landowners located adjacent to the river in formulating plans to enhance transition zones. Assist willing landowners in undertaking the necessary actions to implement these plans. The voluntary-participation plans shall address:

Protecting private property rights including protection of neighboring land uses;
Who will maintain and bear the costs of maintenance;
Avoiding involvement of biological resources regulatory agencies;
Providing incentives;
Addressing mosquito and vector control on a case-by-case basis (especially when used for flood control/runoff areas or the establishment of setback levees)

To assist in enhancing transition zones while protecting adjacent land uses, the following resource is recommended:

"Bringing Farm Edges Back to Life!" (Yolo County Resource Conservation District, 1999)

Additional resources may be found in Chapter 15.

Time Frame for Implementation: Begin within 3 years of adopting LMSP.

9. **Expand Self-Evaluation/Self-Assistance Educational Programs** (e.g., **Farm*A*Syst/Home*A*Syst Models) to Other Land** Uses **to Improve Water Quality for Biological Resources**

Facilitate the expansion of self-evaluation/self-assistance educational programs (e.g., Farm*A*Syst/Home*A*Syst) throughout the watershed to encourage the implementation of best management practices to improve the quality and quantity of biological resources and reduce non-point source pollution. In addition to targeting winegrape growers, the effort should, at a minimum, be expanded to include public and private landowners

undertaking residential uses, municipal uses, cattle grazing and similar uses within the watershed. In addition, consider the use of this model to assist in the long-term maintenance of existing biological resource areas (e.g., address the need to maintain and use existing pathways and provide barriers to bicycles and similar uses which may stray from the pathways and degrade or destroy biological resources).

Time Frame for Implementation: Commence new programs within one year of the adoption of the LMSP. Ongoing for existing programs.

10. Encourage Submittal of Funding Requests to the Lower Mokelunme River Partnership's Partnership Fund

Encourage organizations and landowners to request funding support from the Lower Mokelumne River Partnership's (EBMUD, USFWS, CDFG) Partnership Fund. The Partnership Fund was established to make funds available to interested stakeholders to support activities that protect and enhance the Lower Mokelumne River ecosystem.

Time Frame for Implementation: Ongoing.

View of a Portion of the Northeastern Lower Mokelumne River Watershed

TABLES-A

Plant, Fish and Wildlife Habitat Types Occurring
In the Lower Mokelmmte River Watershed/a!

Habitat Type	Dominant/Associate Species
Agl'icultural Lands	
Deciduous Orchard (DOR)	Almonds, walnuts, peaches
Dryland Grain Crops (DGR)	Cereal rye, barley, wheat
Irrigated Grain Crops (IGR)	Corn, dry beans, safflower
Irrigated Hayfield (IRH)	Alfalfa, hay
Irrigated Row and Field Crops (IRF)	Tomatoes, cotton, lettuce
Pasture (PAS)	Bermuda grass, ryegrass, tall fescue
Vineyard (YIN)	Grapes, kiwi, boysenberries
Urbanized Lands	
Urban (URB)	Grass lawns, trees, hedges
Barren (BAR)	Rock, pavement, sand
"Natural" Lands	
Annual Grass (AGS)	Wild oats, soft chess, brome
Blue Oak Woodland (BOW)	Live oak, Valley oak
Blue Oak-Foothill Pine (BOP)	Foothill pine, live oak, Valley oak, California buckeye
Estuarine (EST)	Plankton, algae, eel grass
Eucalyptus (EUC)	Blue gum, red gum
Fresh Emergent Wetland (FEW)	Big leaf sedge, bulrush, redroot nutgrass
Lacustrine (LAC)	Plankton, duckweed, water lilies
Mixed chaparral (MCH)	Oaks, ceanothus, manzanita
Perennial Grass (PGS)	California oatgrass, hairgrass, sweet vernalgrass
Riverine (RIV)	Water moss, algae, duckweed
Valley foothill riparian (VRI)	Cottonwood, sycamore, valley oak
Valley Oak Woodland (VOW)	Sycamore, black walnut, foothill pine

KEY to TABLE 5-B

FEDERAL
C – Taxa for which the USFWS has on file sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened species
E = endangered
T = threatened
PE = proposed endangered
PT = proposed threatened
R =Taxa for which currently available information does not support issuance of a proposed listing
SPOC = Species of Concern
CH = Critical Habitat
ESA = Federal Endangered Species Act

STATE
E = endangered
T = threatened
R =rare
SA =California Natural Diversity Database special animal (may include taxa considered endangered or rare under Section 15380(d) of CEQA guidelines; taxa that are biologically rare, very restricted in distribution or declining throughout their range; population(s) in California that maybe peripheral to the major portion of a taxon's range, but which are threatened with extirpation in California; and taxa closely associated with habitat that is declining in California --e.g. wetlands, riparian, old growth forest, desert aquatic systems, native grasslands); this category may apply to species at specific stages--e.g. wintering, rookery, breeding, nesting activities.
SP = California Natural Diversity Database special plant
SSC =California Department ofFish and Game Species of Special Concern (may apply to species at particular stages--e.g. wintering, rookery, breeding, or nesting activities)
FPS = California Department of Fish and Game fully protected species, as described in Section 4700 of Chapter 8, Section 5050 of Chapter 2, Division 6, Chapter 1, Section5515 of the California Fish and Game Code
CESA= California Endangered Species Act
CEQA =California Environmental Quality Act

OTHER
CNPS = California Native Plant Society
CNPS lA =plants presumed extinct in California but which may occur in the Plan area over the life of the SJMSCP **Permits.**
CNPS lB =plants rare, threatened, or endangered in California and elsewhere
CNPS 2 = plants rare, threatened or endangered in California, but more common elsewhere
MBTA =birds protected under the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) which implements treaties with Great Britain (for Canada), Mexico, Japan and Russia for protection of migratory birds whose welfare is a federal responsibility
BGEPA =the Bald and Golden Eagle Protection Act (USC Sections 668-668d) which prohibits the taking of bald and golden eagles.

TABLES-B
SPECIAL STATUS SPECIES OCCURRING OR POTENTIALLY OCCURRING IN THE LOWER MOKELUMNE RIVER WATERSHED

Valley Elderberry Longhorn Beetle

SPECIES NAME	Federal /State Status	Other Status
Invertebrates		
Vernal oool fairv shrimo *(Branchinecta lvnchi)*	T	
Yallev elderberrv lon!!horn beetle *(Desmocerus californicus dimomhus)*	T.CH	
Vernal oool tadoole shrimo *(Lenidurus nackardi)*	E	
Mid-vallev fairv shrimo *(Branchinecta* so. *nova)*	lei	
Plants		
Succulent owl's clover aka fleshy owl's clover *(Castilleja campestris* ssp. *succulenta* fmr *Orthocarpus succulentus)*	TIE	CNPS lB
Orcutt !!Tass/Greene's tuctoria *(Tuctoria !!reenei)*	EIR	CNPS IB

SPECIES NAME	Federal /State Status	Other Status
Boggs Lake		CNPS 1B
coyote thistle		CNPS 1B
Suisun marsh aster (*Aster lentus*)	SPOC	CNPS!B
Hoover's calycadenia	SPOC	CNPS 1B
Bristly sedge (*Carex comosa*)	--	CNPS 2
Slough thistle (*Cirsium crassicaule*)	SPOC/SP	CNPS 1B
California hibiscus/rose mallow (*Hib*	SPOC	CNPS 2
Red Bluff dwarf rush (*Juncus leiospermus* var	SPOC	CNPS 1B
Delta tule pea (*Lathyrus jepsonii* var	SPOC	CNPS 1B
Legenere (*Legenere limosa*)	SPOC	CNPS 1B
Fish		
Delta smelt (*Hypon*	T, CH/T	
Sacramento splittail	T/SSC	
	E/E	
	C/SSC	
	T/T	
rvkiss irideus	T	
Amphibians		
frog (*Rana aurora*	T/SSC	
	C/SSC	

SPECIES NAME	Federal /State Status	Other Status
frog (*Rana boylii*)	)C/SSC	
	)C/SSC	
Jiant garter snake (*Thamnophis gigas*)	T/T	
Western pond turtle (*Clemmys marmor*	)C/SSC	
Birds		
Aleutian Canada goose (*Branta canadensis leuc*		
Mountain plover (*Charadrius montanus*)	T/SSC	MBTA
Western yellow-billed cuckoo (*Coccyzus americ*	/h//E	MBTA
Greater sandhill crane (*Grus canadensis tabida*)	B/T	MBTA. FPS
California black rail (*Laterallus jamaicensis co*	SPOC/T	MBTA. FPS
Bank swallow (*Riparia riparia*)	BIT	MBTA
hawk (*Buteo swainsoni*)	SPOC/T	MBTA
Cooper's hawk (*Accip*	B/SSC	MBTA
Sharp-shinned hawk	B/SSC	MBTA
	B/SA	MBTA
Tricolored blackbird (*Ag*	SOC/SSC	MBTA
Golden eagle (*Aquila chr*	B/SSC	MBTA. BGEP
Great egret (*Ardea albus*	B/SA	MBTA

Casmerodius

SPECIES NAME	Federal /State Status	Other Status
Great blue heron (*Ardea herodia*	B/SA	MBTA
Short-eared owl (*Asio flammens*)	B/SSC	MBTA
Ferruginous hawk (*Buteo regalis*	?OC/SSC	MBTA
Northern harrier (*Circus cyanus*)	B/SSC	MBTA
Yellow warbler (*Dendroica pete*	B/SSC	MBTA
Snowy egret (*Egretta thula*)	B/SA	MBTA
White-faced ibis *chichi)*	SPOC/SSC	MBTA
	B/SSC	MBTA
Mammals	--	
[illegible] cat (*Bassaricus astutus*		FPS/f/
Red Bat (*[illegible]s noctivagans*)	B/SSC/a/	
Small-foot [illegible]otis/bat (*Myotis*	SPOC	
Long-eared myotis/bat (*Myotis evotis*)	SPOC	
Fringed myotis/bat (*Myotis thysanodes*)	SPOC	
Long-legged myotis/bat (*Myotis volans*)	SPOC	
Yuma myotis/bat (*Myotis yumanensis*)	SPOC	
Pale big-eared bat *(Plecotus townsendii pallescens* aka *Corynorhinus townsendii pallescens)* aka Pacific western big-eared bat *(Plecotus townsendii townsendii* aka *Corynorhinus townsendii townsendii)*	SPOC/SSC	

Ia! This species is currently pending designation and is believed to be widely distributed in the County.

fbi The Western and Southwestern Pond Turtles *(Clemmys marmorata marmorata* and *Clemmys mannorata pallida.* respectively) have been combined into a single category for the SJMSCP due to disagreements among experts as to the correct taxonomic classification.

lei The Mid-Valley fairy shrimp *(Branchinecta* sp. *nova)* is a newly discovered species of fairy shrimp which is not yet fully described. but has the potential for federal listing.

Iff Pursuant to Fish and Game Code Sections 3511, 4700, 5050, and 5515 these are fully protected species.

/g! Personal Communication (September, 2000)- Elizabeth Pierson and Steve Stocking confirm identification and collection of species in San Joaquin County.

!hJ The USFWS has been petitioned to list this species by the Southwest Center for Biodiversity, et al. in 1999.

6. Water Quality

A. Identified Water Quality Impairments in the LMR Watershed

Overview

Water Quality in the Lower Mokelumne River Watershed affects drinking water, aquatic life and other beneficial water uses (e.g., recreational uses, irrigation, stock watering). The maintenance and improvement of water quality for all of these uses throughout the LMR watershed is a primary goal of this LMR Watershed Stewardship Plan (LMSP).

In 1991, the City of Lodi concluded a limited assessment of water quality within the LMR watershed. The study was performed by Brown and Caldwell Consultants of Sacramento. The findings are contained in an April 29, 1991, report entitled "Final Report on Monitoring of the Mokelumne River" (Brown and Caldwell, 1991). Results of this study evaluated the potential impacts of the Mokelumne River on groundwater in and around Lodi, but contains information applicable to both drinking water and water quality in the LMR, in general. The study identifies the primary sources and constituents affecting the Water Quality of the Lower Mokelumne River as summarized in Appendix 6-C.

Mokelumne River Day Use Area

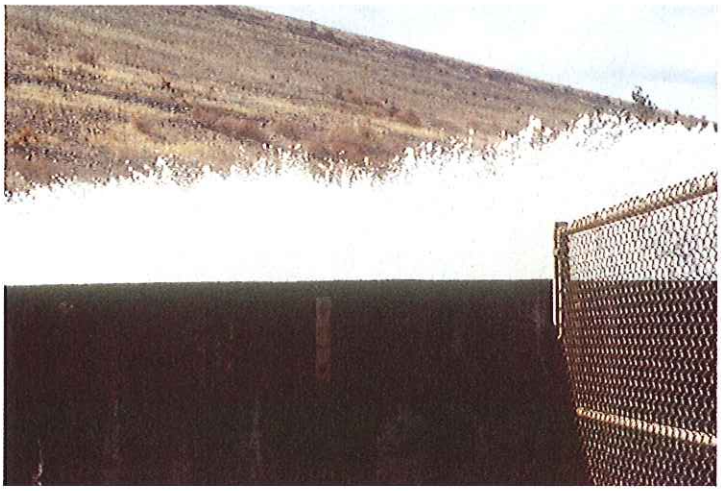
Other measured parameters within the Lower Mokelumne River indicate variable water quality conditions including:

Impairments Designated by the Central Valley Regional Water Quality Control Board: Copper, Zinc, Aluminum

The Mokelumne River below Pardee Dam is designated as an impaired waterway by the State Water Resources Control Board in its Clean Water Act Section 303(d) submittal. The impairment designation is currently for copper, zinc and aluminum due to the presence of these elements in concentrations above the hardness based aquatic toxicity criteria. The presence of these metals is linked to abandoned mines in the Mokelumne watershed. The largest of these mines is the Penn Mine located on the southeastern shore of Camanche Reservoir. During the late 1990's, Penn Mine was restored through a joint effort by the East Bay Municipal Utility District (EBMUD) and the Central Valley Regional Water Quality Control Board. Per Joe Karkoski of the Central Valley Regional Water Quality Control Board, ongoing remediation practices at the Penn Mine appear to be improving water quality associated with the mine, however, the state has determined that ongoing monitoring is required before zinc and copper are removed as an impairment concern. In addition, a new listing cycle for 303(d) waters was completed in Summer, 2001. As a result, Aluminum is being added as a parameter of concern associated with abandoned mines contributing to the Mokelumne's continued designation as an impaired waterway.

Dissolved Oxygen

In addition to impairments described above, and possibly related to them, the Lower Mokelumne River has recurring incidences of Low Dissolved Oxygen (DO). CALFED's Water Quality Program Plan, 2000, states that high deposits of fine sediment from channel disturbance and increased water temperature probably cause low dissolved oxygen levels.



Aerator at the Mokelumne Hatchery

Trihalomethane Formation Potential
The 1991 study conducted for the City of Lodi (Brown and Caldwell, 1991) recommends monitoring by the City of Trihalomethane Formation Potential (THMFP). Trihalomethane can be formed as a by-product of chlorinating drinking water. THMFP concentrations at Pardee between 1983 and 1984 measured approximately .25 milligrams /liter. The current California drinking water standard is 0.01 mg/l. Monitoring stations are recommended at Bruella Road Bridge and Lower Sacramento Road Bridge to "bracket" measurements of Lodi's water quality for THMFP.

B. Monitoring Gaps

Overview
As indicated in Appendix 6-B, monitoring is restricted within the LMR to those areas stretching from Camanche Dam to Woodbridge Dam. In particular, water quality data monitoring from Woodbridge Dam to the Cosumnes River along the lower Mokelumne River is sparse. In addition, not all identified impairments to LMR water quality are currently monitored at some locations making it difficult to accurately assess watershed health and to identify sources of water quality impairments (and therefore to reduce or eliminate the impairments and avoid potential future impairment listings by the state).

Therefore, to accurately assess the success of LMR Watershed Stewardship Programs, to assist in accurately assessing watershed health and to avoid potential future impairment listings by the state (and, subsequent new state and federal regulations), the following is proposed to fill data gaps:

- ✓ **Optimize the location of monitoring stations**
- ✓ **Formulate a voluntary, stewardship-based water quality monitoring strategy**

Optimizing the Location of Monitoring Stations
The following water quality monitoring station gaps exist along the LMR:

- ✓ Bruella Road Bridge
- ✓ Lower Sacramento Road Bridge
- ✓ Below Woodbridge Dam to below the Mokelumne's confluence with the Cosumnes
- ✓ Other areas which may be identified through implementation of the LMSP

The addition of new monitoring stations in these areas should be tied to the water monitoring strategy described in the following paragraphs.

Water Quality Monitoring Strategy
Based on stakeholder input, the LMR Watershed Stewardship Planning Committee concluded that a successful stewardship-based water quality monitoring strategy should:

A Water Quality Monitoring Strategy Should:

- Be voluntary
- Include a broad coalition of watershed stakeholders
- Protect private property rights–including agreements protecting data ownership and restricting data distribution
- Be affordable
- Be suitable for regular, long-term implementation
- Measure and assess those water quality indicators most likely to detect both degeneration of and improvements in water quality within the LMR Watershed
- Measure those water quality indicators which have predictive value (i.e., may be used to determine the cause of degraded water quality, if detected)
- Include provisions for assisting stakeholders to maintain or improve water quality

Water Quality Indicators and Approaches Suitable for Stakeholder - Citizen Monitoring

Pursuant to the U.S. Environmental Protection Agency's Office of Water Quality, Volunteer Stream Monitoring Program, volunteers can be easily trained to monitor many of the "core" indicators of water quality and watershed health. Water quality indicators recommended by the EPA for citizen or stakeholder monitoring programs include:

Water Quality Indicators Suitable for Citizen Monitoring

- Stream Flow
- Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD)
- Temperature
- pH
- Turbidity
- Phosphorous
- Nitrate
- Visual description

The importance of monitoring for each of these indicators is detailed in Appendix 6-D.

Recommended standards and guidelines for monitoring these water quality indicators per the USEPA Office of Drinking Water's *Volunteer Stream Monitoring: A Methods Manual*, may be obtained from the USEPA at www.epa.gov/volunteer/stream or at www.sjcrcd.org/mokelumne. Due to the expense and difficulty involved in monitoring for toxic substances such as heavy metals and organic chemicals (e.g., pesticides, herbicides, solvents, PCBs), volunteers normally do not monitor for these parameters. However, if a funding source can be identified, volunteers should be encouraged to collect water samples for analysis at an accredited lab. These parameters should be combined with biosurveys of the watershed. Guidelines for biosurveys also can be found in: *Volunteer Stream Monitoring: A Methods Manual.*

Members of the LMSP Steering Committee initially investigated the feasibility of monitoring for specific toxic substances used in agricultural and urban land uses within the watershed. However, as noted in the EPA's Citizen Monitoring Guidelines, it soon became clear that monitoring for toxic substances would be both extremely expensive and difficult. Not only is the list of potential toxic chemicals extensive, but the list is also changeable over time and seasonally. A better model for assessing the health of the watershed through water quality monitoring was sought.

Based on discussions with the San Joaquin County Agricultural Commissioner's Office and the California Environmental Protection Agency's Office of Pesticides, the LMR Steering Committee ultimately adopted a broader approach to assessing watershed health and identifying potential toxic substances based on the Sustainable Land Stewardship International Institute's (SLSII) "Measuring the Health of California Streams and Rivers-A Methods Manual for Water Resource Professionals, Citizen Monitors and Natural Resources Students."

This approach emphasizes bioassessment of benthic macroinvertebrates (BMIs) to assess stream health. BMIs common to California rivers and streams include such organisms as: flatworms, roundworms, leeches, water mites, aquatic sow bugs, crayfish, scuds (an organism resembling a saltwater shrimp in appearance), horsehair worms, aquatic worms, snails and limpets, mussels and clams, and water fleas. BMIs also include adults and/or larvae of mayflies, stoneflies, caddisflies, true flies, aquatic beetles, dragonflies, damselflies, true bugs, hellgrammites, alderflies, and aquatic moths.

Diversity and composition of these organisms in collected water samples indicates the overall stream health and can even point towards toxic substances which may be present in streams and rivers. Based on these biological indicators, focused efforts testing for specific toxic substances may then be pursued.

Because many citizens do not have the necessary skills to identify all of these aquatic organisms, the SLSII provides three-day training sessions to assist local communities in implementing this approach. In addition, services of aquatic biologists can be included as part of this monitoring approach.

Voluntary, Stewardship-based Approach: The Coalition of Central Coast County Farm Bureaus' (CCCCFB) Model

In addition to identifying strategies for what to sample and where to sample, the LMR Steering Committee also investigated voluntary monitoring programs which include both the endorsement of regulatory agencies, while allowing site-specific data to remain confidential, thereby protecting private property owners. The Steering Committee adopted the Coalition of Central Coast Farm Bureaus' Agricultural Water Quality Program as a model for its own LMSP Water Quality Monitoring Program.

Based on a framework adopted as part of the California Farm Bureau Federation's Non-Point Source Initiative, the CCCCFB program, which began in the mid-1990s, works with voluntary watershed-level landowner groups to allow landowners to develop confidential plans that fulfill the requirements of state and federal legislation pertaining to water quality while protecting landowners from intrusive regulations on their land and water management practices.

Assisting in this voluntary water quality monitoring effort along with local farm bureaus and landowners, are the USDA's Natural Resources Conservation Service (NRCS), the California Association of Resource Conservation Districts and local Resource Conservation Districts which provide financial assistance, technical expertise, and can assist in protecting the confidentiality of information collected.

Also participating in the monitoring approach are the U.S. Environmental Protection Agency and the California Water Quality Control Board (CWQCB). The CWQCB has extended reporting exemptions to agriculture through 2003. However, a recent lawsuit against the CWQCB seeks to eliminate this exemption.

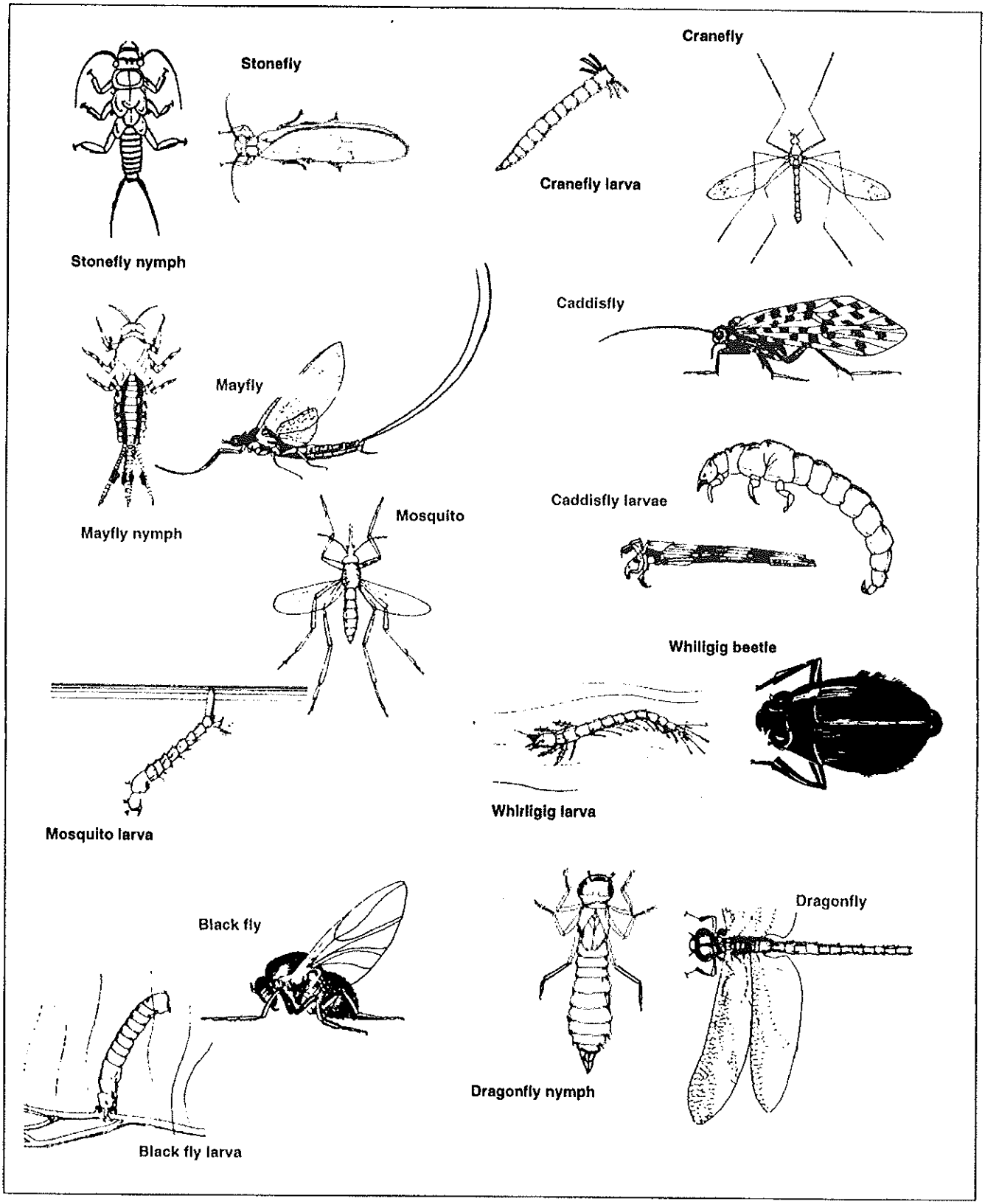
Locally, the CCCCFB model is being pursued by the Coalition of San Joaquin River County Farm Bureaus for San Joaquin, Stanislaus, Merced, Madera, and Fresno counties. This group is in the initial stages of establishing its goals and objectives.

Maintaining Confidentiality of Data Collected

As noted in the preceding paragraphs, maintaining the confidentially of collected data is a high priority to many landowner. For many, participation in a water quality monitoring effort depends on the landowner's ability to develop confidential plans that fulfill the requirements of [1]state and federal legislation while protecting landowners from additional regulations on their land and water management practices. There are numerous mechanisms for protecting the confidentiality of data collected by landowners as part of a voluntary, stewardship-based water quality monitoring effort. These include:

- ✓ **Restrictions on the disclosure of data** gathering sites and information to public agencies and the general public. Restrictions are enforced by releasing information only after it is transformed into statistical aggregate form that does not allow identification of individual landowners, operators or data-gathering sites. [Upper Mississippi River Basin Conservation Act of 2000 to develop a coordinated public-private approach to reducing

[1] Upper Mississippi River Basin Conservation Act of 2000 to develop a coordinated public-private approach to reducing nutrient and sediment losses in the Upper Mississippi River Basin (House of Representatives, 4013)



Common macroinvertebrates found in stream systems. (Source: 1987 Western Regional Environmental Education Council)

nutrient and sediment losses in the Upper Mississippi River Basin (House of Representatives, 4013)]

- ✓ **Use of non site-specific information only** to create spatial data layers to identify priority areas for the implementation of best management practices without identifying individual landowners or data collection sites (e.g., grower acreage, agricultural commodity, Township, Range, Section).

- ✓ **Use of a third-party contractor or non-profit** (operating between the landowner and a public agency) to serve as the clearinghouse for monitoring data. Contractors are charged with developing a program acceptable to both the landowners and public agencies which both protects confidentiality of information collected from individual landowners while allowing access to the data in some format useful to public agencies.

- ✓ **Retain environmental checklists and records involved with monitoring on site.** Those records remain the property of the landowner. Evaluations of progress/improvements are made by a non-regulatory third party. This is the process used by the California Dairy Quality Assurances Program.

- ✓ **Existing law**. In California, a state law considers a record to be confidential if it is so characterized by a federal agency (therefore, characterization of data collected as part of a voluntary monitoring program by a federal agency would extend protection to landowners for the information collected).

- ✓ **Agency intervention**. In 1999±, the U.S. Environmental Protection Agency (Region 9, California) demanded from two districts of the Natural Resources Conservation Service (NRCS) in California, data collected by the NRCS at local dairies. The EPA intended to use the data to conduct inspections of individual diaries pursuant to the Federal Clean Water Act. The data was collected by the NRCS for a different purpose and under the assumption that it would not be used to identify individual dairies. The NRCS took the issue to Washington D.C., where the NRCS successfully argued that compliance with the request would threaten the basic trust that the NRCS relies upon to attract voluntary participation in its programs. In response, the EPA issued a new policy agreeing not to request records of this type again.

  The NRCS further noted that, pursuant to the Federal Clean Water Act, the EPA can compel records to be produced only from owners or operations of *point* sources of pollution–however, this ability does not extend to federal record.

The LMR Steering Committee will fashion a confidentiality program for its voluntary water quality monitoring program, based on these examples and tailored to the specific concerns of individuals participating in the monitoring program.

EXISTING WATER QUALITY-RELATED PROGRAMS IN THE LMR WATERSHED

Please refer to the Education Element for additional programs which assist in maintaining and improving water quality within the Lower Mokelumne River.

Existing Water Quality Monitoring Efforts:

One of the best ways to avoid the need for new state and federal regulatory programs is to implement proactive plans to maintain and improve water quality. These programs are best-evaluated when baseline information on water quality is collected before, during and after program implementation. Extensive water quality monitoring which establishes baseline levels of many contaminants and indicators of watershed health are ongoing along the Lower Mokelumne River. Locations of monitoring stations along the Mokelumne River are shown in Appendix 6-A. The water quality parameters currently monitored on the LMR and the agencies or groups involved in those monitoring activities are listed in Appendix 6-B.

San Joaquin Farm Bureau Federation Water Quality Program: This is a voluntary program for farmers to participate in improving water quality overseen by the San Joaquin Farm Bureau Federation.

Lodi-Woodbridge Winegrape Commission (LWWC): LWWC has produced the *Lodi Winegrower's Workbook* (see the Education Element for a more detailed description). This self-assessment guide to integrated farming practices addresses viticulture, soil management, water management, pest management, habitat management, management of human resources and evaluation of wine quality.

CA Dairy Quality Assurance Program (CDQAP): The San Joaquin County U.C. Cooperative Extension office assist in implementation of this voluntary program to encourage management practices promoting resource conservation (including water quality conservation) in dairy operations. Additional program details may be found at www.CDQA.org.

California Cattleman's Association (CCA) CA Rangeland Water Quality Management Plan, Riparian Grazing Project, Beef Quality Assurance Program: The California Rangeland Water Quality Management Program (CRWQMP) was developed by the CCA, U.C. Cooperative Extension, environmental agencies and interest groups to improve water quality on private rangeland under a voluntary program officially adopted in 1995 and includes rangeland water quality management strategies, policy and coordination mechanisms as well as sample plans and sources of assistance.

The Riparian Grazing Project is a joint effort of the CCA and U.C. Cooperative Extension to determine correct and incorrect methods for grazing to ensure riparian success . The project is a state-wide study of rangeland riparian areas in which riparian area health, specific site watershed conditions, and site specific management are simultaneously examined and address both past and present grazing methods. Program assistance is being provided by the CA Department of Forestry and Fire Protection, the U.S. EPA, the CA Department of Fish and Game, the U.S. Department of Forestry, the U.S. Bureau of Land Management, UC Davis and others. The LMSP is currently working with the voluntary Murphy Creek Restoration Group which has used some of the evaluation methods included in this project as part of its overall restoration program.

Much like the CA Dairy Quality Assurance Program, this program was begun in 1986 as an industry effort to encourage cattlemen to follow certain quality control measures exceeding those of the U.S. Department of Agriculture and the Food and Drug Administration. The California Cattleman's Association Quality Assurance Program grew from this effort in 1992 and emphasizes a partnership with the U.C. Cooperative Extension. Surveys and workshops are used to evaluate multiple activities, including animal handling and sanitation activities which may affect the watershed, including watershed water quality.

San Joaquin County Resource Conservation District Technical Assistance Program: In partnership with the USDA's Natural Resources Conservation Service, the San Joaquin County Resource Conservation District, provides technical assistance and on-the-ground resource conservation technical assistance to landowners and local organizations. NRCS assistance allows the San Joaquin County Resource Conservation District to assist in providing expertise in the areas of range conservation, soil conservation, engineering, biology, agronomy and similar resource conservation areas. Through this technical assistance program, many of the practices voluntarily implemented by landowners to protect their natural resources directly and indirectly protect water quality within the LMR watershed and throughout San Joaquin County.

San Joaquin County Agricultural Commissioner's Office Dormant Spray Program: This office designs and implements numerous educational programs including a Dormant Spray Education Program for growers around watersheds which is ongoing and stresses best management practices. The program currently focuses on the San Joaquin River watershed. The agency also provides educational programs including its most recent seminar pertaining to best management practices related to sulfur use.

San Joaquin County Resource Conservation District's Mokelumne River Watershed Owner's Manual: A voluntary, stewardship-based workbook to guide homeowners in reducing non-point source pollution. Please refer to the Education Element, [Chapter 2, Page 1] for a full description of this program.

City of Lodi's Citizen Monitoring Program/Storm Drain Detectives: In October, 2000, the City of Lodi's Public Works Department began a local Mokelumne River Citizen Monitoring Program focusing on locations where the City's storm drains enter the river. Also called the "Storm Drain Detectives," this Citizen Monitoring Program is a collaborative effort of the City of Lodi Public Works Department, State Water Resources Control Board Division of Water Quality, Lodi Lake Nature Area Docent Council and four local high schools. Monthly monitoring of the Mokelumne River and Lodi's storm water is done by students and teachers, grades 7-12, and other volunteers who have been trained by a program coordinator. Students participating in the program may receive school credits. In April, 2001, a CALFED grant was awarded to the City of Lodi to expand this monitoring and education effort in the Lodi area.

For more details about the program, sampling locations, and monitoring results, go to the City of Lodi web site at www.lodi.gov and search for "Storm Drain Detectives."

Total Maximum Daily Load Program (TMDL): The TMDL process was established by the U.S. Environmental Protection Agency pursuant to Section 303(d) of the Federal Clean Water

Act to assist in attaining state water quality standards (i.e., goals to protect aquatic life, drinking water, and other water uses) for waters classified as impaired. The process provides a flexible assessment and planning framework for identifying load reductions or other actions needed to attain water quality standards.

Because abandoned mines, the source of the impairment listing for the LMR, are under the jurisdiction of individual landowners and agencies (and, therefore, outside of the control of watershed residents), TMDL planning for the LMSP focuses on avoiding future impairment listings related to urban and agricultural runoff. The LMSP envisions accomplishing this task through filling in data gaps and facilitating implementation of voluntary best management practices to maintain and improve water quality in the watershed while avoiding or reducing the need for new state and federal regulations.

Appendix 6-A includes a more detailed accounting of the TMDL process and program.

GOALS

One of the primary objectives of the LMR Stewardship Plan is to proactively and voluntarily avoid the need for additional state or federal regulations pertaining to water quality within the LMR watershed to maintain and improve water quality both for overall watershed health and for human health. Of the three broad categories generating discharges within the LMR watershed (Abandoned mines, Urban runoff, Agricultural runoff), private citizens and local public agencies are best equipped to maintain and improve water quality in the LMR watershed by focusing on reducing contaminants originating from urban runoff and agricultural runoff. The following goals and implementation programs are intended to achieve that objective.

- ✓ **Facilitate the implementation of stewardship-based non-point source pollution reduction practices to maintain and improve water quality**

- ✓ **Facilitate the implementation of stewardship-based naturally-occurring pollution reduction practices to maintain and improve water quality**

- ✓ **Promote voluntary programs to maintain and improve water quality standards to avoid the need for new state and federal water quality regulatory programs**

IMPLEMENTATION PROGRAMS:

1. Facilitate Implementation of the *Mokelumne River Watershed Owner's Manual*

Continue ongoing efforts to involve watershed residents in implementing practices which promote water quality maintenance and improvement through use of the *Mokelumne River Watershed Owner's Manual.*[i] Make the handbook available on the LMR website (www.sjcrcd.org) and to other local, state and federal agencies; continue working with local schools to encourage student participation in formulating and implementing action plans to reduce non-point source pollution; continue to involve local community groups

and organizations and homeowner's associations in actively preserving and improving water quality in the LMR watershed.

Time Frame for Implementation: Commenced in January, 2002. Ongoing throughout the LMSP implementation process.

2. **Facilitate Implementation of the *Lodi Winegrower's Workbook***

Continue ongoing efforts to involve winegrape growers in implementing practices which promote water quality maintenance using the *Lodi Winegrower's Workbook* (Ohmart, Matthiasson, 2000). Make the workbook available on the LMR website (www.sjcrcd.org) or through a link with the Lodi Woodbridge Winegrape Commission. Support implementation of the program (e.g., through grant assistance, promoting the program in LMR publications and at LMR events). Promote the workbook to other local, state and federal agencies.

3. **Expand Self-Evaluation/Self-Assistance Educational Programs to Other Land Uses to Promote Management Practices Promoting Resource Conservation**

Facilitate the expansion of self-evaluation/self-assistance educational programs (e.g., Farm*A*Syst/Home*A*Syst and the CA Dairy Quality Assurance Program-CDQAP) throughout the watershed to encourage the implementation of management practices promoting resource conservation for agricultural operations. Using the *Lodi Winegrower's Workbook* (Ohmart, Matthiasson, 2000) and the *Mokelumne River Watershed Owner's Manual* (Brodie, 2002) as models, expand these programs to address rangeland operations, orchard farming, public agency operations, and other land uses which may affect water quality. Facilitate the expansion of the CA Dairy Quality Assurance Program, overseen by San Joaquin County's U.C. Cooperative Extension, to encourage implementation of management practices promoting resource conservation on dairies. Facilitate implementation of the California Cattleman's Association statewide resource conservation program, the Biologically Integrated Orchards System (BIOS) program, and the Biologically Integrated Farming Practices (BIFS) program.

Timeframe for Implementation: Ongoing.

4. **Facilitate Efforts to Monitor the Success of Water Quality Improvement Programs and to Fill Existing Needs/Data Gaps**

Assist in establishing new monitoring locations and expanding parameters monitoring at existing locations to fill identified data gaps for monitoring water quality and water quality improvement along the LMR. Consider working with the City of Lodi, EBMUD, San Joaquin County and other groups and organizations to expand participation in the citizen's monitoring program and to expand monitoring sites to include areas of the LMR watershed throughout its reach to implement this program. Facilitate certification of

citizen's monitoring groups by the state to validate data collected by these monitoring programs.

Monitor "core" indicators including: Stream Flow, Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD), temperature, pH, turbidity, phosphorous and Nitrates as directed in the USEPA Office of Drinking Water's *Volunteer Stream Monitoring: A Methods Manual.*

In addition to monitoring "core" water quality parameters, undertake bioassessment of macroinvertebrates as indicators of overall watershed health and to direct studies of specific toxic chemicals pursuant to the Sustainable Land Stewardship International Institute's (SLSII) "Measuring the Health of California Streams and Rivers-A Methods Manual for Water Resource Professionals, Citizen Monitors and Natural Resources Students."

Time Frame for Implementation: Commence within one year of Plan adoption.

5. **Facilitate the Formation of a Voluntary Water Quality Monitoring Coalition Consisting of Watershed Stakeholders**

Facilitate the formation of a voluntary water quality monitoring coalition consisting of watershed stakeholders (e.g., existing citizen-monitoring program participants and agencies; landowners; public and quasi-public agencies, schools, youth groups and other stakeholders) and based on the Coalition of Central Coast Farm Bureaus' Agricultural Water Quality Program (CCCFB). CCCFB's program works with voluntary watershed-level landowner groups to allow landowners to develop confidential plans that fulfill the requirements of state and federal legislation pertaining to water quality while protecting landowners from intrusive regulations on their land and water management practices (see introductory text for additional details).

This program also should include elements which support the continuance of the City of Lodi's Citizen's Monitoring Program (e.g., through assistance in preparing grants, promoting the program in LMR publications and at LMR events).

This program will assist in monitoring the effectiveness of programs implemented pursuant to this Water Quality element.

Time Frame for Implementation: Commence within one year of Plan adoption.

6. **Participate in TMDL Planning Efforts**

Provide representation to TMDL planning efforts to ensure coordination with the LMR Watershed Stewardship Plan and to promote the use of stewardship-based models to reduce non-point source pollution.

Time Frame for Implementation: Ongoing, as needed.

7. Promote Voluntary Management Practices which Reduce Erosion While Promoting Resource Conservation

Promote voluntary management practices which reduce erosion potential while promoting resource conservation. Practices should be based on the activities included in **Appendix 6-E**, "*Stream Corridor Restoration: Principles, Processes, and Practices*; Federal Interagency Stream Restoration Working Group, 1998."

Time Frame for Implementation: Incorporate into ongoing efforts implementing the Lodi Winegrowers Workbook and Mokelumne River Watershed Owner's Manual.

[ii] ©2002 by the San Joaquin County Resource Conservation District. Written and edited by John Brodie. Collaborating Authors: Alyson McCann, Carl DuPoldt, Carolyn Johnson, Bill McCowan, Barbara Kneen Avery, Elaine Andrews, Karen Filchak, Richard Castelnuovo, Dean Solomon, Shirley Niemeyer, Michael P. Vogel, and Kathleen Parrott. Adapted with permission from *Home*A*Syst: An environmental Risk Assessment* guide for the Home © 1997 by the Regents of the University of Wisconsin System, and with the cooperation of the Northeast Regional Agricultural Engineering Service (NRAES).

Appendix 6-A
Total Maximum Daily Load (TMDL): Process and Program

The TMDL process was established by the U.S. Environmental Protection Agency pursuant to Section 303(d) of the Federal Clean Water Act to assist in attaining state water quality standards (i.e., goals to protect aquatic life, drinking water, and other water uses) for waters classified as impaired. The process provides a flexible assessment and planning framework for identifying load reductions or other actions needed to attain water quality standards.

The TMDL process has three steps:

- ✓ *Identify Quality Limited Waters:* States must identify and prepare a list [303(d)list] of waters that do not or are not expected to meet water quality standards after applying existing required controls (e.g., minimum sewage treatment technology, etc.).[1] As noted, the LMR is classified as impaired due to metals discharged by the Abandoned mines.

- ✓ *Establish Priority Waters/Watersheds:* States must prioritize waters/watersheds and target high priority waters/watersheds for TMDL development. Impairments resulting from copper and zinc in the LMR have been given a Low TMDL Priority with TMDLs anticipated by 12/31/2011. The US EPA and SRWQCB indicate that undertaking proactive efforts within a community to maintain or improve water quality may assist in assigning lower priorities for the establishment of TMDLs for existing and potential new impairment listings.

- ✓ *Develop TMDLs:* For listed waters, States must develop TMDLs that will achieve water quality standards, allow for seasonal variations and an appropriate margin of safety. A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect individual water bodies. State and territorial water quality agencies are usually responsible for implementing the TMDL process.

TMDLs address all significant stressors which cause or threaten to cause water body impairment including:

- ✓ *Point Sources* (e.g., sewage treatment plant discharges, discharges from mining operations),
- ✓ *Non-point Sources* (e.g., runoff from fields, streets, range, or forest land) and
- ✓ *Naturally Occurring Sources* (e.g., runoff from disturbed lands).

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[1]The state evaluates water quality within hydrological units. The LMR is within the Lower Mokelumne-Lower Cosumnes unit for the purposes of assessing 303(d) impairments. The boundaries of that hydrological unit differ from the boundaries of the Lower Mokelumne River Watershed. Per David Smith of the U.S. EPA's TMDL program and Joe Karkoski of the CVRWQCB, hydrologically defined watersheds (like the LMR identified watershed) rather than the state's hydrological units are used in determining the contents of TMDL plans. Therefore, for the LMR, the true hydrologically-defined watershed is applicable to the TMDL process (rather than the state's Lower Mokelumne River-Lower Cosumnes River hydrological unit which includes Mosher Slough and Five-Mile Slough as additional impaired waterways within the unit).

Appendix 6-B
LOWER MOKELUMNE RIVER MONITORING LOCATIONS and PARAMETERS MONITORED

Monitoring Location	Agency Conducting Monitoring	Parameters Monitored
Upstream of Camanche Dam: Camanche Reservoir, Below Penn Mine, ½ Mile above Penn Mine, Highway 49 Bridge, Pardee Reservoir	USGS, EBMUD	*Conductivity, Dissolved Oxygen, pH, Temperature, Chemical Oxygen Demand, Oxidation/Reduction Potential, Hardness/Total, Total Dissolved Solids, Volatile suspended solids, Turbidity* *Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Scandium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc* *Nitrate as N, Sum Nitrate & Nitrite as N, Nitrite as N* *Sulfate, Orthophosphate as P, Total Phosphate as P, Alkalinity (Total as CACO3),* *Ammonia as N, Total Organic Carbon* *Bacillariophyceae (Asterionella, acnanthes, cymbella, cyclotella, fragilaria, gyrosigma, melosira, navicula, nitzschia, pinnularia, rhizosolenia, rhopalodia, stephanodiscus, synedra, tabellaria)* *Chlorophyceae (ankistrodesmus, cruicigenia, dinobryon, elakotothrix, eudorina, hormidium, mallomonas, pediastrum, scenedesmus, schiroederia, spondylosium, staurastrum)* *Ciliata (codonella); Cyanophyceae (anabaena); crustaceans* *Dinophyceae (ceratium, peridinium); Euclenophyceae (trachelomonas); rotifers; Zooflagellates (aulomonas, domatomonas); Chlorphyll A, Chlorophyll A (corrected), Pheophytin A*
Camanche Fish Hatchery: Below Camanche Dam at Camanche Dam Valve House; 1994-present		
Camanche Dam Powerhouse 100 yds. upstream of Power House effluent		
Camanche Dam Powerhouse 100 yds. downstream of Power House effluent		
Van Assen Park (1994 - Present)		*Conductivity, pH, Temperature, Total Dissolved Solids, Total Suspended Solids, Volatile Suspended Solids, Turbidity, Alkalinity (total as CACO3), hardness: total, Chemical Oxygen Demand, Total Organic Carbon,* *Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc* *Nitrate as N, Nitrite as N, Sum Nitrate & Nitrite (as N) Orthophosphate as P, Total Phosphate as P, Sulfate, Ammonia as N*
Elliott Bridge: (199?-present)	USGS, EBMUD	*Conductivity, pH, Temperature, Total Dissolved Solids, Total Suspended Solids, Volatile Suspended Solids, Turbidity, Alkalinity (total as CACO3), hardness: total,*

		Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Vanadium, Zinc *Nitrate as N, Nitrite as N, Sum Nitrate & Nitrite (as N) Orthophosphate as P, Total Phosphate as P, Sulfate* *Bacillariophyceae (Asterionella, acnanthes, attheya, ceratoneis, cymbella, cyclotella, diatoma, fragilaria, gomphonema, gyrosigma, Nantzschia, melosira, navicula, nitzschia, pinnularia, rhopalodia, stephanodiscus, synedra, tabellaria); Chlorophyceae (ankistrodesmus, bulbochaete, closterium, crucigenia, dinobryon, elakotothrix, eudorina, hormidium, pediastrum, scenedesmus, schroederia, spirogyra, spondylosium, tetraedron, ulothrix); Ciliata (codonella); Chrysophyceae (dinobryon); Chrysophyceae (Mallomonas); crustaceans , Cyanophyceae (anacystis, coccochloris, oscillatoria); Dinophyceae (ceratium); Euclenophyceae (trachelomonas); rotifers; Zooflagellates (aulomonas, domatomonas); Chlorphyll A, Chlorophyll A (corrected), Pheophytin A*
City of Lodi - Storm Drains	City of Lodi, Public Works Dpt. **Citizen Monitoring-Storm Drain Detectives (Jan, 2001 – Present)**	Site #1: East of Cluff Ave near Solid Waste Transfer Station (River above storm drains) Site #2: Cluff Ave. near Solid Waste Transfer Station (Storm drain #1) Site #3: 317 Mokelumne River Dr. (Storm Drain #3) Site #4: Awani Dr. @ Mokelumne River (River) Site #5: 1202 Rivergate Dr. (Storm drain #5) Site #6: 1050 N. Lincoln @ Edgewood Dr. (Storm drain #8) Site #7: Ham Ln @ Lodi Lake Wilderness Area (River, by storm drain) Site #8: Lodi Lake at North Pump Station Outlet (City storm drain #16) Site #9: Woodbridge Dam (River near dam *PH, Dissolved Oxygen, Turbidity, Water Temperature, Total Dissolved Solids (Conductivity)* *Toxicity Test: (Ceriodaphnia dubia)*
Woodbridge	USGS, EBMUD	*Multiple parameters – See Elliot Bridge for Partial Listing*
Lodi Lake Lagoon (Middle Swim, Deep Swim , Lake Inlet, Lagoon Outlet), and River (at Point)	**City of Lodi** Public Works (2000)	*Temperature, Dissolved Oxygen, Total Coliform, Fecal Coliform*
	City of Lodi Public Works Department 8/7 through 8/27 - 1985	*Total Coliform, Fecal Coliform*

Appendix 6C

Primary Discharges to the Mokelumne River (Brown & Caldwell, 1991)

Discharge Source	Constituent	Regulated Drinking Water Constituent
Abandoned Mines (The Mokelumne River is designated by the Regional Board as impaired per 303(d) of the Federal Clean Water Act due to metals from abandoned mines, such as the Penn Mine–see discussion under "impairment" following)	Aluminum, Copper, Iron, Lead, Zinc	Aluminum, Copper, Iron, Lead, Zinc
Agricultural return flows	Dissolved solids, Nutrients, Pathogens Organic matter, Sulfur	Dissolved solids, Nitrate, Coliform, Trihalomethanes/a/, Sulfate
Urban runoff	Copper, Lead, Zinc, Hydrocarbons, Fecal coliform bacteria, Arsenic, Cadmium, Chromium, Nickel	Copper, Lead, Zinc, Arsenic, Cadmium Chromium, Nickel, Fecal coliform bacteria, Various hydrocarbon constituents/b/

/a/ Formed when water high in organic carbon is chlorinated
/b/ Includes benzene, ethylbenzene, toluene, and xylene

Appendix 6-D
Importance of Monitoring Indicators for Water Quality
(Source: US EPA Office of Water *Volunteer Stream Monitoring: A Methods Manual*)

Parameter	Importance/Influences
Stream Flow	**Importance:** Large, swiftly moving rivers can receive pollution discharges and be little affected, while small streams have less capacity to dilute and degrade wastes. Velocity determines the kinds of organisms that can live in the stream. Flow affects the amount of silt and sediment carried by the stream (sediments in a slow-flow system settle quickly, sediments in fast-flowing systems stay suspended longer). Fast-moving streams generally have higher dissolved oxygen due to better aeration. **Influencing Factors:** Weather, industrial and agricultural use levels, dams
Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD)	**Importance:** Aquatic animals are vulnerable to low dissolved oxygen levels, especially in the early morning on hot summer days when stream flows are low, water temperatures are high and aquatic plants have not been producing oxygen since sunset. **Influencing Factors:** Watershed uses which may reduce oxygen include: storm water runoff from farmland and urban streets, feedlots and failing septic systems; microorganisms using oxygen to decompose organic materials in wastewater discharged from sewage treatment plants.
Temperature	**Importance:** Influences oxygen content, rates of photosynthesis, metabolic rates of aquatic organisms and sensitivity of organisms to toxic wastes, parasites and disease. **Influencing Factors:** Weather, removal of shading stream bank vegetation, impoundments of water, discharges of cooling water, urban storm water and groundwater inflows to streams.
pH	**Importance:** Influences chemical and biological processes. Most aquatic animals prefer a pH between 6.5 and 8.0. Outside this range, diversity decreases. Low pH can allow toxic elements and compounds to become mobile and "available" for uptake by aquatic plants and animals creating conditions toxic to aquatic life (especially sensitive species like rainbow trout). **Influencing Factors:** Atmospheric deposition (acid rain), surrounding rock and some wastewater discharges.
Turbidity	**Importance:** High turbidity can increase water temperature because suspended particles absorb more heat which reduces the concentration of dissolved oxygen. High turbidity also reduces the amount of light penetrating water which reduces photosynthesis and production of dissolved oxygen. Turbidity can clog fish gills, reducing resistance to disease, lowering growth rates, and affecting egg and larval development. As particles settle, they can blanket stream bottoms and smother fish eggs and benthic macroinvertebrates. **Influencing Factors:** Include soils erosion, waste discharge, urban runoff, eroding stream banks, large numbers of bottom feeders (e.g., carp) which stir up bottom sediments, excessive algal growth
Phosphorous	**Importance:** Essential nutrients for plants and animals. Phosphorous is normally a nutrient in short supply, therefore even a modest increase in phosphorous can set off undesirable events including accelerated plant growth, algae blooms, low dissolved oxygen and the death of certain fish, invertebrates and other aquatic animals. **Influencing Factors:** There are numerous natural and human sources of phosphorous including soil, rocks, wastewater treatment plants,

	runoff from fertilized lawns and crop land, failing septic systems, runoff from animal manure storage areas, disturbed land areas, drained wetlands, water treatment and commercial cleaning operations.
Nitrate	**Importance:** Essential plant nutrients. Together with phosphorous, in excess, can accelerate eutrophication, causing dramatic increases in aquatic plant growth and changes in the types of plants and animals living in-stream. This, in turn, affects dissolved oxygen, temperature and other indicators. Excess nitrates can cause hypoxia (low levels of dissolved oxygen) and can be toxic to warm-blooded animals under certain conditions. **Influencing Factors:** Sources include effluent from wastewater treatment plants, runoff from fertilized lawns and crop land, failing on-site septic systems, runoff from animal manure storage areas and industrial discharges containing corrosion inhibitors.

7. FLOOD MANAGEMENT

BACKGROUND[1]

San Joaquin County has a long history of flooding. Native American legends and journals of Spanish explorers and early settlers record widespread flooding in the county in 1776, 1805, 1826, 1828, 1830 and 1847. Between 1847 and 1900, nine major and eight minor floods occurred. The flood of 1861-62 is the largest flood event recorded in the county with flood stages of 6-15 feet higher than those of earlier reported floods. Between 1903 and 1969, 32 rain floods and 7 significant snow melt floods are documented with the most damaging, countywide, occurring in November and December of 1950 and in December of 1955. Other major rain floods in the county occurred in 1906, 1907, 1909, 1911, 1938 and 1958. The most damaging of these was the 1938 snow melt flood. More recently, notable flooding in the county has occurred in 1980, 1982, 1983, and 1997/98.

Historically, flooding along the Mokelumne River has been caused primarily by rainstorms in the late fall and winter and by snow melt runoff in the spring and early summer, however, rain floods can occur in the watershed anytime between November and March. These floods are characterized by high peak flows of moderate duration and large volumes of runoff. Flooding is more severe when previous rains have already saturated the ground or when rain falls on snow in the higher elevations adds snow melt to the rain flood runoff. Snow melt floods on the Mokelumne can occur between April and July. Snow melt flooding is of much larger volume and longer duration than rain flooding, but it lacks the high peak flows characteristic of rain

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[1] Unless otherwise noted, the following narrative is an excerpt of: *Flood Insurance Study of San Joaquin County, California - Unincorporated Areas, Revised February 5, 1997*, by the Federal Emergency Management Agency (FEMA)

floods. Snow melt floods may be exacerbated by late spring rains on snow fields or lower elevation tributary watersheds.

Due to the rural nature of much of the Mokelumne River watershed, specific records about flooding on the Mokelumne River are limited prior to 1904. Major flood events along the Mokelumne River since 1904 are listed in Table 7-A.

Table 7-A
Mokelumne River Major Flood Events
1904-Present

1907	1928	1964*
1909	1937	1967
1911	1950*	1969
1914	1952	1970
1921	1955/56*	1997/98
1925	1963	

** See text below*

The most destructive flood along the Mokelumne was the November, 1950, flood which resulted in approximately $1.1 million in damage. The December 1955-January 1956 created nearly three-quarters of a million dollars in damage. The flood of December, 1964, is the largest recorded flood along the Mokelumne River. However, due to the completion of Camanche Dam in early 1964, damage was limited to several thousand dollars.

The Camanche Dam, constructed by the East Bay Municipal Utility District with financial assistance from the Federal Government for flood control benefits, provides the primary flood control for areas adjacent to the Lower Mokelumne River. Completed in April, 1964, the Camanche Dam and Reservoir has a channel capacity of 5,000 cubic feet per second (cfs) between Camanche Dam downstream to State Highway 99. However, when channel flows exceed 3,000 cfs, some flooding can occur on adjacent farmlands. Releases of 5,000 cfs have occurred in 1969, 1970, 1986, and 1997. The storage capacity of Camanche Dam is approximately 430,900 acre feet with 200,000 acre-feet of that total reserved for flood storage. A diversion dam at Woodbridge, operated by the Woodbridge Irrigation District provides some incidental flood protection to areas downstream of Woodbridge.

As indicated in the preceding, limited flooding can occur when the Lower Mokelumne River exceeds 3,000 cfs with major flooding occurring over 5,000 cfs. Some of the Mokelumne River=s major flood events, recorded in cubic feet per second, are provided in Table 7-B.

Table 7-B
Representative Recorded Maximum Monthly Mean Stream Flows (cfs) for Major Flood Events Along the Lower Mokelumne Measured below Camanche Dam & Woodbridge Dam

Year	Month	Stream flow (Cubic Feet per Second, cfs)	Location of Measurement
1950	Dec	4,568	Below Camanche Dam
1950	Dec	4,283	Below Woodbridge Dam
1952	May	4,217	Below Camanche Dam
1952	May	3,990	Below Woodbridge Dam
1956	Jan	3,529	Below Camanche Dam
1956	Jan	3,435	Below Woodbridge Dam
1963	May	2,997	Below Camanche Dam
1963	May	2,646	Below Woodbridge Dam
1964	Dec	406	Below Camanche Dam
1964	Dec	299	Below Woodbridge Dam
1967	May	3,091	Below Camanche Dam
1967	May	2,602	Below Woodbridge Dam
1969	Feb	2,651	Below Camanche Dam
1969	Feb	2,586	Below Woodbridge Dam
1970	Feb.	2,652	Below Camanche Dam
1970	Feb.	2,698	Below Woodbridge Dam
1982	May	3,889	Below Camanche Dam
1982	May	3,523	Below Woodbridge Dam
1983	April	3,726	Below Camanche Dam
1983	April	3,640	Below Woodbridge Dam
1986	March	5,116	Below Camanche Dam
1986	March	4,712	Below Woodbridge Dam
1995	June	3,847	Below Camanche Dam

Table 7-B
Representative Recorded Maximum Monthly Mean Stream Flows (cfs) for Major Flood Events Along the Lower Mokelumne Measured below Camanche Dam & Woodbridge Dam

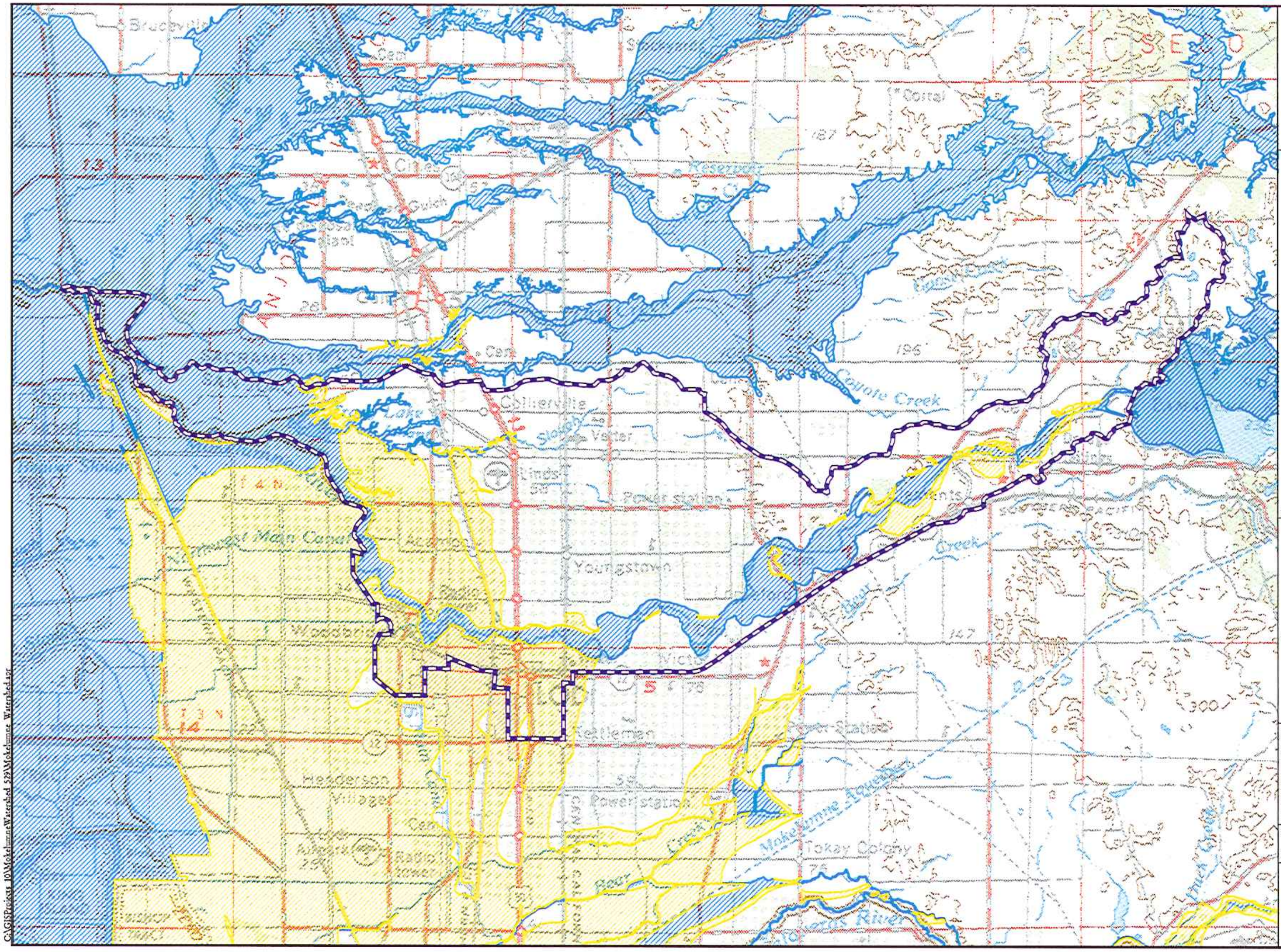
1995	June	3,504	Below Woodbridge Dam
1997	January	4,978	Below Camanche Dam
1997	January	4,748	Below Woodbridge Dam

Ten reservoirs along the upper Mokelumne River above Camanche Dam provide a combined storage capacity of 433,000 acre-feet (See Table 7-C). The primary use of these reservoirs is not flood storage. However, these reservoirs can assist in controlling or reducing small to moderate floods, but have little effect on large flood flows. The most important reservoirs assisting Camanche Dam in the protection of lands from flooding along the lower Mokelumne are: Pardee Reservoir, Salt Springs Reservoir and the Lower Bear Reservoir.

Table 7-C Water Storage Projects on the Upper Mokelumne River (Above Camanche Dam)				
Name	**Stream**	**Operating Agency**	**Storage Capacity (acre feet)**	**Year Complete**
Pardee Reservoir	Mokelumne River	EBMUD/a/, /b/	210,000	1929
Lake Tabeaud	Jackson Creek	PG&E/c/	1,258	1901
Tigers Creek Afterbay	N. Fork Mokelumne River	PG&E	2,607	1931
Lower Bear Reservoir	Bear River	PG&E	50,680	1952
Upper Bear Reservoir	Bear River	PG&E	7,310	1900
Salt Springs Reservoir	N. Fork Mokelumne River	PG&E	141,857	1931
Twin Lake	Tributary to Blue Creek	PG&E	1,207	1898
Meadow Lake	Tributary to Blue Creek	PG&E	5,656	1903
Lower Blue Lake	Blue Creek	PG&E	5,091	1885
Upper Blue Lake	Blue Creek	PG&E	7,300	1881
Total Storage Capacity			432,966	

/a/ East Bay Municipal Utility District
/b/ Rounded to nearest hundred or thousand
/c/ Pacific Gas and Electric Company

The Federal Emergency Management Agency=s (FEMA) Flood Insurance Rate Maps (FIRMs) for San Joaquin County identify numerous locations along the LMR which are subject to recurring flood events as illustrated on FEMA=s Flood Insurance Rate Maps (FIRMs) summarized in the following figures (Detailed copies of these maps indicating the watershed=s 100 and 500-year flood plains may be ordered through the San Joaquin Resource Conservation District=s website at www.sjcrcd.org)



100- AND 500-YEAR FLOODPLAINS

Lower Mokelumne River Watershed
San Joaquin County, CA

Watershed Boundary

100-Year Floodplain

500-Year Floodplain

GIS Data Projection: CA State Plane, NAD 83, Zone 3, Feet.

N

10,000 0 10,000
Feet

0.8 0 0.8 1.6
Miles

Source: Federal Emergency Management Agency, Flood Insurance Rate Maps, 1995; East Bay Municipal Utility District, 1:250K DRG, August 30, 1999; Mike Callahan, Civil Engineer, San Joaquin County, Personal communication with EIP Associates regarding watershed delineation, March 2001; Rick Leong, EBMUD, Personal communication with Amy Augustine regarding watershed delineation, April 6, 2001; Frank Beeler, Municipal Service Center, City of Lodi, Personal communication with Amy Augustine regarding watershed delineation, May 4, 2001; and EIP Associates, Watershed Boundary and GIS Program, August 30, 2001.

PROJECT NUMBER: 10529-00

Requested by: AA Created by: NJ Date: 8/30/01

EIP ASSOCIATES

C:\GISProjects_10\MokelumneWatershed_529\Mokelumne_Watershed.apr

In the absence of a major flood event, annual mean flows within the lower Mokelumne River have ranged from a low of 54.7 in 1961 to a high of 2,280 in 1983.

Public comments received during the LMSP community input workshops indicate that issues associated with flooding along the LMR include:

- ✓ Privately-owned levees along the river are in need of regular repair and are subject to failures due to a lack of programs and funding to maintain these levees for public and landowner benefit.
- ✓ Debris and vegetative overgrowth is blocking and clogging the Mokelumne in many places resulting in flooding and bank erosion which destroys private property and degrades gravel habitats for spawning. There is a need to balance flood control and the management of biological resources.
- ✓ Flooding destroys property, erodes banks and increases sedimentation throughout the watershed.
- ✓ Water releases by EBMUD may sometimes adversely affect downstream landowners
- ✓ Flood improvement projects upstream on the Mokelumne sometimes adversely affect downstream properties.

EXISTING FLOOD MANAGEMENT PROGRAMS

Lower Cosumnes - Mokelumne Rivers Feasibility Study: The U.S. Army Corps of Engineers is serving as lead agency in a multi-agency effort to evaluate potential ecosystem restoration projects and non-traditional flood damage reduction in the Mokelumne and Cosumnes River flood plains extending from the Woodbridge Irrigation District (WID) Dam to the confluence of the two rivers with the San Joaquin River. Non-federal sponsors of the effort include the Sacramento Area Flood Control Agency (SAFCA), The Nature Conservancy, Sacramento County, the State Resources Agency, the Sacramento County Water Agency (SCWA) and the East Bay Municipal Utility District (EBMUD). The project management plan is expected to be adopted in July, 2002. Specific projects to implement the plan have not yet been adopted, but discussions have included: construction of levees, stabilizing levees, breaching levees, construction of grade-control structures and/or levee weirs, modifying channels, revising the Camanche flood control curves and modifying the pattern of flood flow releases. Completion of the program is anticipated in 2004.

RCD/Humboldt State University Historic River Mapping Project: The San Joaquin Resource

Conservation District is currently working with Humboldt State University, as part of the Lower Mokelumne River Watershed Stewardship planning process, to map the history of the Mokelumne River, including the movements of the river along its course. This information will be used to assist LMSP planners to refine locations which have historically flooded along the LMR for use in the various LMSP implementation programs, including the LMSP's flood management programs.

GOALS

When achieving these goals, we must remember that all of the constituents of the Lower Mokelumne River Watershed are interrelated and that good stewardship is ensuring support and maintenance for all beneficial uses of the Mokelumne River.

- ✓ **Facilitate the implementation of flood management practices which encourage resource conservation, protect water quality, protect private property and the rights of private property owners.**

- ✓ **Balance the necessity for flood management activities with the needs of biological resources in designing flood management programs.**

IMPLEMENTATION PROGRAMS:

1. <u>Facilitate Debris Redistribution</u>

The San Joaquin County Resource Conservation District will oversee coordination between landowners and other stakeholders to: a) oversee acquisition of a regional general permit from the U.S. Army Corps of Engineers to permit debris redistribution, b) acquisition of a programmatic Section 1600 Streambed Alteration Permit from the CA Dpt. of Fish and Game to permit debris redistribution; and c) identify funding sources to hire qualified companies to manage and redistribute debris, as needed, on an ongoing basis. Work conducted pursuant to permits shall be undertaken through a voluntary participation program. Work performed on private property is subject to landowner permission. Involvement of the U.S. Fish and Wildlife Service, California Department of Fish and Game and U.S. Army Corps of Engineers is crucial to successfully addressing this issue. A model for permitting associated with this program exists through the Joint Aquatic Resource Permit Application (JARPA) which was developed to streamline permitting for work in or near wetlands or water in the San Francisco Bay Area. The San Francisco Estuary project and the Association of Bay Area Governments can provide additional information. The Napa River Flood Protection Project, spearheaded by the Citizens for Napa River Flood Management, also provides a model for this proposed LMR program. Additional information can be obtained from the Napa County Flood Control and Water Conservation District and the County of Napa Public Works Department.

Time Frame for Implementation: Commence within 24 months of plan adoption.

2. **Promote Voluntary Management Practices which Reduce Erosion Potential Caused by Flooding While Promoting Resource Conservation**

See Program #7 of the Water Quality Element and Appendix 6E.

Time Frame for Implementation: Ongoing.

3. **Investigate the Feasibility of Forming a Reclamation District for Non-Project LMR Levee Maintenance**

Notify private landowners within the watershed to gauge interest in forming a private reclamation district for the maintenance of non-project levees along the Mokelumne River. If landowners express interest, facilitate the formation of a reclamation district.

Time Frame for Implementation: Commence within 24 months of plan adoption.

4. **Assist in Making Water Release Information Accessible to Landowners along the lower Mokelumne River**

Provide river flow and water release information on the San Joaquin County Resource Conservation District/Lower Mokelumne River Watershed Stewardship Plan Website at www.sjcrcd.org and links to other on-line resources providing ongoing flow information to facilitate landowner access to information which will assist in predicting potential flood events (e.g., Department of Water Resources CA Data Exchange Center, U.S. Geological Survey real-time flows, East Bay Municipal Utility District Gauging Station Daily update site, American Whitewater). Include flow information from tributaries which contribute to flood levels in the Lower Mokelumne River (e.g., Cosumnes River) and include monitoring information from multiple locations along the Lower Mokelumne.

Time Frame for Implementation: Commence within 12 months of plan adoption.

5. **Assist Landowners Along the LMR to Anticipate Flood Levels on Individual Parcels Based on Water Release Information Provided Under Program #4**

Develop an interactive program on the San Joaquin County Resource Conservation District/Lower Mokelumne River Watershed Stewardship Plan Website(www.sjcrcd.org) to assist landowners in converting water releases in cubic feet per second to surface water elevations (and flood levels) on individual properties along the LMR.

Information may be derived from the publication A *Determination of Channel Capacity of the Mokelumne River Downstream From Camanche Dam San Joaquin and Sacramento Counties, California*, US Dpt. of the Interior Geological Survey Water Resources Division, Menlo Park, CA 1972 (See Appendix 7A). The document includes 122 cross sections extending through individual properties from the confluence of the Cosumnes and Mokelumne Rivers to the base of Camanche Dam. Surface water elevations are provided for each of the 122 cross sections for water releases at Camanche Dam of 3,000; 4,000; 4,500; 5,000 and 6,000 cubic feet per second.

Time Frame for Implementation: Commence within 12 months of plan adoption

6. **Facilitate Efforts to Improve the Efficiency of EBMUD's Early Warning System to Notify Landowners of Potential Flooding Along the Lower Mokelumne River**

In coordination with EBMUD, facilitate the establishment of an automatic dial-up or similar service which provides automated notification to all landowners along the Lower Mokelumne River when flooding is predicted. The current system requires individual dial-up of scattered landowners.

Time Frame for Implementation: Commence within 12 months of plan adoption.

7. **Facilitate Communications Between Dam Operators and Landowners**

Facilitate the improvement of communications between landowners and dam operators by providing landowners with a phone number or alternative means of communication allowing direct contact with dam operators to report incidents of downstream flooding.

Time Frame for Implementation: Within 18 months of plan adoption.

8. **Support the Completion of and Provide Input to the U.S. Army Corps of Engineers' San Joaquin Comprehensive Study**

Establish contact (through the RCD Watershed Coordinator) with the U.S. Army Corps of Engineers to facilitate support for and to provide input to the San Joaquin Comprehensive Study. Specifically, the RCD Watershed Coordinator shall facilitate the generation of a flood plain study for the Lower Mokelumne River which identifies potential flooding areas at various flow levels. This information shall be included on the RCD/LMR website (see Program #4).

Time Frame for Implementation: Commence within 12 months of plan adoption.

9. Facilitate Voluntary Landowner Participation in Implementing Management Practices Promoting Resource Conservation Offered through or Resulting from the Lower Cosumnes-Mokelumne Rivers Feasibility Study

The Lower Cosumnes-Mokelumne Rivers Feasibility Study has identified the following programs to facilitate flood management within the LMR: construction of setback/backup levees, stabilizing levees, breaching levees, construction grade-control structures and/or levee weirs, modifying channels, revising the Camanche Reservoir flood control curves and modifying the pattern of flood flow releases. The Watershed Coordinator shall keep abreast of the status of this program and inform landowners of opportunities available through this program which assist in implementing voluntary management practices which promote resource conservation. Landowners should be encouraged to design projects to minimize public health vectors (e.g., mosquitoes, ticks, bees, rats), especially when designing setback levees.

Time Frame for Implementation: Ongoing.

10. Promote the use of Native Grasses and Other Native Plants in Restoration and Landscape Projects

Promote the use of native grasses and other native plants, (including native perennial bunch grasses, with roots of 4-8' in length, to assist in bank stabilization), in restoration and landscape projects, to assist in bank stabilization during flood events. Include descriptions, drawings or photographs of these natives and sources for purchasing native grasses on the sjcrcd.org website.

Time Frame for Implementation: Ongoing.

8. CULTURAL RESOURCES

BACKGROUND

The Mokelumne River watershed is rich in cultural resources. These resources reflect the Native American, mining, agricultural, railroad, and social heritage and people which shaped the watershed.

Officially-Designated Resources: The following cultural resources are located within the watershed and have been given formal recognition by the State of California and/or the National Register of Historic Places:

Table 8-A
National Register of Historic Places
Listed Resources Located in the Watershed

Resource Name	Address	Date of Listing
Hotel Lodi	5 S. School St., Lodi	9/29/95
I.O.O.F. Hall	Main St., Woodbridge	1/4/81
Locke House and Barn	19960 W. Elliott Rd., Lockeford	6/19/72
Locke's Meat Market	13480 Hwy. 88, Lockeford	2/19/82
Lodi Arch	Pine St., Lodi	9/17/80
Morse-Skinner Ranch House	13063 N. Hwy. 99, Lodi	8/21/86
Terminous Culling Chute	14900 W. Hwy. 12, Lodi	4/19/84
Woman's Club of Lodi	325 W. Pine St., Lodi	5/20/88
Woodbridge Masonic Lodge No. 131	1040 Augusta St., Woodbridge	4/20/89

Town of Woodbridge
CA State Historical Landmark No. 358

In 1852, Jeremiah H. Woods and Alexander McQueen established a ferry across the Mokelumne River at this point. As a result, a new road from Stockton to Sacramento by way of Wood's Ferry was established. In 1858, Woods built a bridge at the site of the ferry from which the town, laid out in April 1859, took its name.

Lodi Arch
National Register of Historic Places
CA State Historical Landmark No. 931

Designed by architect E.B. Brown and built in 1907 for the Lodi Tokay Carnival, the arch served as an entrance into Lodi and a symbol of agricultural and commercial growth. Essentially unaltered since construction, the structure is one of the few remaining Mission Revival ceremonial arches left within California. The structure is listed on the National Register of Historic Places.

←Lockeford Meat Market

Locke House and Barn→

National Register of Historic Places

Table 8-B
CA State Historical Landmarks within the Watershed

Name/No. of Resource	Location	Description
Benson's Ferry, No. 149	S. bank of N Fork of Mokelumne River 100 ft. W of County Rd. J8, 3 mi N of Thornton	River ferry, est. 1849 purchased by John A. Benson in 1850. In 1852, Benson laid out the then-principal wagon road between Sacramento and Stockton. Following Benson's murder in 1859, ferry was operated by son-in-law, Ed Gayetty.
Lone Star Mill, No. 155	Entrance to Stillman L. McGee Park, Mackville Rd., 1 mi. N of Clements	Sawmill built in 1852 on Mokelumne River removed to Hodge and (David S.) Terry's ranch in 1854 with flour mill attached the following year. Mill burned in 1856 and was rebuilt on present site as Lone Star Mill.
Site of Wood's Ferry and Wood's Bridge, No. 163	Present bridge is approx. location of original ferry and bridge. Lower Sacramento Road, Woodbridge	Established by Wood in 1852 upon his arrival. He built a ferryboat and established this crossing known as Wood's Ferry. In 1858, he built a tool bridge at the old ferry crossing, charging $1 for a pair of animals and wagon and .50 extra for every additional pair of animals in the wagon.
Town of Woodbridge, No. 358	Lower Sacramento Road, Woodbridge	See preceding page for photo and description.
Lockeford (Locke's Ford) aka Pioneer Hill, No. 365	.6 mi. N. of Hwy. 12 on Elliot Rd., Lockeford	It was on this hill that Dr. Dean Jewett Locke and his brother Elmer H. Locke built the first cabin on this Section in 1851. Disturbed by grizzly bears, they spent their first nights in oak trees. Dr. Locke, physician for the Boston and Newton Joint Stock Company, left Boston on April 16, 1849 to cross the plains and arrive at Sacramento on September 16, 1849. Because he built and maintained a ford across the Mokelumne River, his wife, Delia Hammond Locke, in 1859 named the town he laid out on his ranch Lockeford.
San Joaquin Valley College Site, No. 520	18500 N Lilac St, Woodbridge	Built through subscription by the residents of Woodbridge and dedicated as Woodbridge Seminary in 1879 by the United Brethren Church, this was the site of San Joaquin Valley College from 1882 to 1897. It was then used as Woods Grammar School until 1922, when the building was dismantled.
Lodi Arch, No. 931/a/	SE corner of E. Pine and S. Sacramento Streets, Lodi	See preceding page for photo and description.

/a/ Arch is located along one of the LMR boundaries

Elderberries are a culturally valuable plant used by Native Americans for medicine, dyes for basketry, flutes, and many other purposes
Photo by Brother Alfred, courtesy of CalVeg

Native Americans: The Native Americans who once resided in the watershed lived at the boundary between three different Native American groups: the Yokuts, Miwoks and the Wintun tribes. While there is some dispute, it is widely believed that the lower Mokelumne River watershed Native Americans belonged to the Plains Miwoks. This tribe was further divided into the Mokellos, Lalas and Machacos.

The name "Mokelumne" is believed to have been derived from one, or a combination of, three sources: 1) from the Mokellos tribe; 2) from a corruption of Wakalumitch–the Miwok name for river, or 3) from the Native American village of Mokel located on the river near Lockeford. John Fremont is credited for giving the Mokelumne its current spelling when he traveled through the area and stopped just east of the present-day Tretheway Road crossing over the Mokelumne in 1844 (although he referred to the area as the Rio de los Mukelumnes, at the time).

San Joaquin County Historical Society and Museum: The San Joaquin County Historical Society sponsors numerous educational programs related to watershed issues including agricultural history, environmental issues and cultural resources topics.

Valley Days is an intensive environmental learning program offered to third and fourth grade students. Pioneer Days is a living history program offered to elementary school students with classes held in an actual restored one-room schoolhouse (the 1870 Calaveras School). Grandmother's trunk, for students five and up, provides trunk and suitcase exhibits brought to schools or at the museum and is an interactive exploration of the contents of a trunk or suitcase that includes selected museum objects.

The museum also includes the Sunshine Trail–a garden designed for visitors with impaired vision which recreates a trip across California from west to east with water features, bridges, native stone and California native plants. The Wheelwright Exhibit represents one of 19 trades that were important to the development of the county and its economy. The Cutting Shed Exhibit demonstrates a process that has nearly vanished but once employed a large number of students in the late 19th and early 20th century. The Joseph C. Tope and C. Gregory Crampton Ethnographic Collections provide an important link to understanding the culture of the Native Americans who once lived in San Joaquin County.

Slide shows offered by the Society include histories of Lodi and Lockeford. The Society also

operates the San Joaquin County Historical Society Museum located in Micke Grove Park which offers additional resources including a display of agricultural equipment, library and research services (Gerald D. Kennedy Reference Library and Photographic Collections), classes and workshops, and docent training.

GOALS

When achieving these goals, we must remember that all of the constituents of the Lower Mokelumne River Watershed are interrelated and that good stewardship is ensuring support and maintenance for all beneficial uses of the Mokelumne River.

- Promote economic development through use of cultural resources;
- Provide economic incentives for rehabilitating and maintaining historic structures;
- Increase educational opportunities through study of cultural resources;
- Support existing cultural resource education programs; and
- Encourage conservation and restoration of cultural resources.

IMPLEMENTATION PROGRAMS:

1. **Promote Eco-tourism/Economic Development through Integration of Cultural Resources**

   Promote programs which encourage the rehabilitation and/or maintenance of cultural resources for use as tourist-related facilities (e.g., bed and breakfast inns, antique shops, hotels, restaurants) which may be integrated with recreational opportunities along the Mokelumne River (e.g., bed and breakfast/rafting tours, restaurant dinner/ultralite plane tours, fishing guide services offered at sports shops, hiking and biking trail maps and guided tours offered at local sports shops and hotels). Similarly, recognize cultural resources, including the cultural significance of plants important to Native Americans, through interpretive materials provided at trail heads or along trail routes.

   Time Frame for Implementation: Commence program within three years of Plan adoption.

2. **Promote Adoption of Economic Incentive Programs for Cultural Resource Rehabilitation and Maintenance (e.g., Mills Act, Marks Historical Rehabilitation Act)**

   Pursue adoption of the Mills Act Program within the Watershed to provide landowners with property tax incentives in exchange for rehabilitation and maintenance of cultural resources. Consider adoption of the Marks Historical

Rehabilitation Act (Health and Safety Code Sections 37600-37883). Make landowners and developers aware of available programs for dedicating facade easements to San Joaquin County to assist in gaining federal tax incentives and/or funding for project implementation.

Time Frame for Implementation: Commence after completion of Program #3.

3. **Support Establishment of Certified Local Government Status for Communities within the Watershed**

Work with the State Office of Historic Preservation (OHP), and the U.S. Department of the Interior-National Park Service and local communities within the watershed to obtain Certified Local Government Status for communities within the watershed.

Time Frame for Implementation: Begin discussions with OHP within three years of Plan adoption.

4. **Increase Educational Opportunities through the Study of Cultural Resources**

Support a voluntary Historic Marker Program and preparation of a guide for walking, bicycling and driving tours describing the cultural resources within the watershed. Guides should be included on web sites, distributed to local merchants, Chamber of Commerce, Visitor's Bureaus, and similar groups. See also Programs in the LMSP Education Element.

Time Frame for Implementation: Commence within five years of Plan adoption.

5. **Support Existing Cultural Resource Education Programs**

Promote existing cultural resource education programs targeting cultural resources through the implementation of the Education Element of the LMSP.

Time Frame for Implementation: Ongoing.

6. **Encourage Conservation of Cultural Resources within Open Spaces Required as Mitigation for Development Proposals**

Encourage local agencies to, when establishing open spaces required for mitigation of biological or other resources in conjunction with development proposals, locate those open spaces in areas which also include cultural resources thereby providing multi-purpose open spaces and encouraging the conservation of multiple resources including cultural resources. For example, Native American cultural resources are frequently located along the banks of rivers which may be included in open spaces for biological resources as mitigation for development

proposals. Open spaces established as project mitigation for preservation of biological resources and in conjunction with development proposals should be located where these biological resources coincide with the location of Native American cultural resources whenever feasible.

Time Frame for Implementation: Ongoing.

7. **USDA Natural Resources Conservation Service (NRCS) Vegetation Restoration Program**

Promote the USDA NRCS Vegetation Restoration Program which promotes restoration using native plants and plants culturally significant to Native Americans. Include links to the USDA NRCS' Plant Materials Center in Lockeford on the Resource Conservation District website and in other publications created as part of the implementation of the LMR Watershed Stewardship Plan.

Time Frame for Implementation: Link to Resource Conservation District website to coincide with Plan adoption. Remainder of the program will be ongoing.

9. Economics

BACKGROUND/SETTING

San Joaquin County & the Lower Mokelumne River Economy

Overview of County & Representative Watershed Economy

Economic Measure	Data Description	San Joaquin County	LMR Watershed Representative Areas
Annual Average Unemployment Rate	1983-2001	11.6%	Not available
Range in Annual Average Unemployment Rate	1983-2001	Low: 8.7% (2001) High: 15.7% (1983)	Not available
Civilian labor force	Jan. 2002	267,300	Lodi: 31,200 Woodbridge: 2,200 Lockeford: 1,580
Taxable sales	2001 - 1st Qtr.	$1,581,025,000	Lodi: $159,654,000

Source: State of California, Employment Development Department, Labor Market information Division

INDUSTRY IN THE LOWER MOKELUMNE RIVER WATERSHED

Wine Grape and Other Agricultural Industries

The City of Lodi's website states that "premium quality wine grapes are the economic engine that drives the Lodi-Woodbridge region." As noted in the LMR's Agricultural Resource Element, about 80,000 acres of vineyards surround the Lodi community. The City of Lodi reports that Lodi wine grape growers annually produce a crop worth more than $300 million. Nearly 20% of California's premium wine grapes are grown in this region making it the "Wine Grape Capital of the World."

The Lower Mokelumne River Watershed and the Lodi area in particular, has been part of California's wine industry for over 100 years. Today, grapes grown in the Lodi region are used by more than 80 wineries throughout the state including such wineries as Robert Mondavi, Ernest & Julio Gallo, and Sutter Home. As of 2001, the Lodi wine grape region of the Lower Mokelumne River Watershed was ranked first in California State Production for producing the following grape varieties: Zinfandel, Cabernet Sauvignon, Sauvignon Blanc, Chardonnay and Merlot.

Local wineries are also an important part of the region's economy. At least twenty wineries have a presence and/or grow grapes in the watershed.

Other agricultural products contributing to the economy of the LMR watershed include: dairy/livestock, poultry, orchard products and row and field crops.

Non-Agricultural Industry

The Lower Mokelumne River Watershed area is home to approximately 50 manufacturing and non-manufacturing companies with 50 or more employees.

Manufacturing

Manufacturers within the watershed region produce a wide range of products including: cereals, trailer hitches, industrial storage racks, rubber products, cans, cushions and seat covers, computer components, warehouse racking, plastic pipe, Styrofoam containers, and nameplates. Manufacturers within the watershed region are also involved in plastic injection molding, distribution, printing, packaging and distribution of agricultural products (e.g., canning, fruit and nut packaging).

Non-Manufacturing

Non-manufacturing employers within the watershed region include schools, local government, a hospital, health care facilities including convalescent homes and rehabilitation centers, large and small general retailers and wholesalers, banks, car sales, home decorating, hardware and garden supply sales, RV sales, environmental specialists, newspaper publishing, grocery stores, fast-food restaurants, and refuse pick-up and disposal services.

Other

Mining, utilities, construction, transportation & information services, finance, insurance, real estate, rental and leasing, and services are also a large part of the industry of the Lower Mokelumne River Watershed area.

EXISTING ECONOMIC DEVELOPMENT PROGRAMS

Downtown Lodi Business Partnership (DLBP): The Downtown Lodi Business Partnership was formed in 1998. The primary purpose of this non-profit organization is to manage and promote downtown Lodi as a community shopping center. Approximately 240 businesses belong to the DLBP which extends from Locust Ave (North) to Lodi Avenue (including portions of the south side of Lodi Avenue) and from Sacramento Street and the Railroad (East) to Church Street (West).

Discover Lodi! Wine and Visitor Center This center, opened in September, 2000, promotes Lodi wines, local agro-tourism and provides education on the art and science of wine grape growing and wine making.

Chambers of Commerce The Lodi District Chamber of Commerce has promoted and advocated agricultural, industrial and commercial businesses in Lodi and Northern San Joaquin County since 1923. The Lockeford/Clements Chamber of Commerce performs a similar function for the communities of Lockeford and Clements.

Lodi Conference and Visitor's Bureau The Lodi Conference and Visitor's Bureau was established to serve as an information and planning resource for both Lodi residents and visitors. The organization promotes the Lodi Community, Lodi's wine industry, visitor services and other activities which assist in promoting economic development.

Lodi Economic Development Department The focus of the City of Lodi's economic development program is to plan, organize and coordinate the Economic Development and Revitalization Program for Lodi with other agencies and organizations; promote job growth; and market Lodi as a regional business center. The primary goals of the program are to: 1) promote new businesses; 2) retain and expand existing businesses; 3) create a "business friendly" atmosphere for conducting business; 4) promote a competitive fee and tax environment; 5) assist business ventures and 6) market Lodi as a business and tourist center.

One of the primary objectives of the Economic Development Program is to market Lodi as a tourist and business location through: a) coordination with the Lodi District Chamber of Commerce Tourist Committee; b) coordinating with the Lodi-WoodbridgeWinegrape Commission and c) considering contracting with a business marketing specialist to represent Lodi in the State and nation.[1]

The Economic Development Plan includes proposals to: a) host a quarterly business forum, b) host an "Economic Development Forum" in Lodi; c) coordinate activities with the Chamber of Commerce Committees; Support Chamber activities and resources, and d) use Chamber resources to enhance the economic development program.[2]

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1 See Objective #9 of Lodi's Economic Development & Revitalization Program

2 See Objective #10 of Lodi's Economic Development & Revitalization Program

The Economic Development Department promotes economic development in the City of Lodi, in part, through an emphasis on the region's natural and cultural resources. It is this emphasis on the natural and cultural resources of the watershed for economic development purposes that the LMSP's Economic Development Element promotes.

San Joaquin Partnership
The City of Lodi is affiliated with the San Joaquin Partnership, a collaborative effort by private sector leadership and all cities of San Joaquin County to enhance its economic development program.

Resource Conservation & Development District
The purpose of the RC&D program is to accelerate the conservation, development and use of natural resources, improve the general level of economic activity and enhance the environment and standard of living in authorized RC&D areas. Authorized RC&D areas are locally sponsored areas designated by the Secretary of Agriculture for RC&D technical and financial assistance program funds.

GOAL

When achieving these goals, we must remember that all of the constituents of the Lower Mokelumne River Watershed are interrelated and that good stewardship is ensuring support and maintenance for all beneficial uses of the Mokelumne River.

Support economic development activities which promote the watershed's resources while preserving and enhancing those resources.

IMPLEMENTATION PROGRAMS:

1. **Investigate the Potential Economic Development Benefits of Mokelumne River Watershed Resource Conservation & Development District**

   Investigate the potential economic development benefits of a Mokelumne River Watershed RC&D (or, joining with an existing RC&D should one be established in the region) to promote economic development within the watershed emphasizing the region's natural and cultural resources.

   Time Frame for Implementation: Investigate the feasibility and interest in forming a Resource Conservation & Development District in coordination with the current efforts of the San Joaquin County Resource Conservation District.

2. **Promote Resource-Based Tourism for Economic Development**

   Promote and support, through advertising, Coordination with the Chambers of Commerce and Visitor's Centers, advertising in travel magazines, participation in local business associations and similar marketing venues:

Heritage Tourism programs which encourage the rehabilitation and/or maintenance of cultural resources for use as tourist-related facilities (e.g., museums, bed and breakfasts, antique shops, hotels, restaurants).

Eco-Tourism events which focus on the tourism-generating power of biological resources (e.g., Crane Festival, Salmon Festival, river rafting).

Agro-Tourism facilities and events which promote agricultural resources to attract tourism (e.g., wineries, wine-tasting, Grape Festival)

Recreational opportunities for tourists emphasizing the linkages between recreation and businesses in the watershed area.

Pursue opportunities to expand the economic development opportunities of resource-based tourism by promoting a multiple resource-based activities as "package" visits to prolong the staying time and expenditures associated with resource-based tourism (e.g., stay in an 1880s renovated bed & breakfast, go wine-tasting, take an aerial tour of the watershed, bike or hike along scenic trails, go kayaking, and eat at local restaurants–all in the same visit).

Time Frame for Implementation: Adopt plans for supporting an advertising campaign within three years of plan adoption.

10. Emergency Services & Fire Prevention

BACKGROUND
During the scoping process for the Lower Mokelumne River Watershed Stewardship Plan, watershed stakeholders identified two issues related to health and safety within the watershed:

- ✓ The need for special training and equipment for local public safety agencies (e.g., sheriff, fire departments) to assist in making swift water rescues and performing similar emergency functions for citizens using the Mokelumne River and Lodi Lake; and

- ✓ The need to address fire prevention and fire suppression along the Mokelumne River in coordination with PG&E, landowners, river users and other groups.

Emergency response. The San Joaquin County Sheriff's Department has jurisdiction over the Mokelumne River's waterways. The Sheriff's Department maintains a Swift Water Rescue (SWR) Unit and the SAR Delta Unit which is responsible for conducting swift water rescues.

In recent years, the Sheriff's Department has conducted some boat patrols along the Mokelumne. Due to a recent drowning, the Sheriff's Department has committed to patrolling the Lower Mokelumne during the summer months and on weekends.

However, when the Sheriff's Department is not on patrol, local fire districts are often the first on

scene to emergencies occurring within the Mokelumne River waterways. Because the Mokelumne River is under the jurisdiction of the Sheriff's Department, these local fire districts do not receive funding to support rescue services provided within the banks of the Mokelumne River. Instead, funding for local fire districts for emergency rescues is limited to rescues undertaken on the banks and shores of the river (but not within the river itself).

Further complicating the issue of emergency rescue services is the number of calls for swift-water rescues annually. These calls average only 1-2 annually making funding for these services a lower priority than for other emergency services occurring more frequently.

The San Joaquin County Sheriff's Department Division of Boating and Safety is conducting ongoing discussions with local fire districts to establish a joint agreement addressing mutual aid and, potentially, funding.[1]

The following fire districts are located within the watershed:

- ✓ Lodi City Fire Department - 217 W. Elm, Lodi
- ✓ Clements Rural Fire District - 18901 E. Highway 88, Clements
- ✓ Mokelumne Rural Fire District - 13157 E. Brandt Rd., Lockeford
- ✓ Woodbridge Fire District - 400 E. Augusta, Woodbridge
- ✓ Liberty Fire District – 24124 N Bruella Rd., Acampo
- ✓ Thornton Rural Fire Protection District - 25999 N. Thornton Road, Thornton

Two of these districts are actively involved in on-the-water rescues.

The Woodbridge Fire District (WFD) reports that the 1-2 calls annually for swift water rescues come from areas concentrated along the Mokelumne River upstream of Woodbridge dam. The WFD, a first-responder to many of the river's rescue calls, has numerous personnel trained in flood rescue with several individuals certified in swift water rescue. However, WFD lacks the capability of performing on-the-water rescues because it lacks funding for a boat. The district is currently pursuing grant funding to acquire this necessary piece of equipment. The agency hopes to obtain a Zodiac-type boat which can be easily launched and transported to various locations along the river. [2]

The Mokelumne Rural Fire District also has personnel trained in swift-water rescue and, through volunteer fund-raising efforts, has acquired a boat to assist in on-the-water rescues. Rescues made on the river by the Mokelumne Rural Fire District occur at the district's own expense. The Mokelumne Rural Fire District provides mutual aid to the Woodbridge Fire District when water-related rescue calls are received. However, transporting the Mokelumne Rural Fire District's boat to emergency sites located far downstream takes time that is not always available in

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[1] Mike Cockrell, San Joaquin County Sheriff's Dpt.

[2] Mike Kirkle, Chief - Woodbridge Fire District

swift water rescue operations.

In addition to these districts, the East Bay Municipal Utility District's Mokelumne Watershed & Recreation Division Resource Patrol Unit assists with fighting grass fires and providing basic life support on EBMUD property. Medical responses from this unit are primarily at the Mokelumne River Day Use Area and at the Mokelumne River Hatchery. The Resource Patrol Unit also provides assistance to local fire districts for emergencies which occur on or adjacent to EBMUD lands including fires, water rescues and similar emergencies. This unit is responsible for implementing fire prevention measures on EBMUD lands, including annual discing to create fire breaks.

Fire. Fire prevention is an important aspect of watershed planning. During community scoping for the Lower Mokelumne River Watershed Stewardship Plan, it was noted that electrical transformers crossing the river have been known to start wild land fires in the watershed. Similarly, recreationists have been blamed for starting wild land fires from campsites.

In addition to protecting lives and property, fire prevention also plays a role in watershed ecology. Fire prevention is frequently tied to vegetation management and may, at times, conflict with wildlife management practices and vice versa. Similarly, fire is sometimes an essential element of vegetation management, but its controlled use may be restricted due to air quality concerns.

Fire prevention education is one tool which may assist in reducing the risk of wild land fires within the Lower Mokelumne River watershed.

GOALS

When achieving these goals, we must remember that all of the constituents of the Lower Mokelumne River Watershed are interrelated and that good stewardship is ensuring support and maintenance for all beneficial uses of the Mokelumne River.

- ✓ **Assist and support local public safety agencies in acquiring special training and equipment necessary to meet the unique emergency-response needs of the watershed.**

- ✓ **Promote fire suppression, prevention and management education within the watershed.**

IMPLEMENTATION PROGRAMS:

1. Provide Support to Properly Equip the Watershed's Fire Districts for Swift-Water and Related On-River Rescues

Assist in preparing grant applications to acquire and maintain rescue boats for fire districts within the watershed, especially iwhere trained personnel already are available.

Include representatives from local fire districts when undertaking public outreach and watershed education programs.

Keep stakeholders adjacent to the river advised of the needs of their local fire district to encourage public-private partnerships improving safety along the Mokelumne River.

Time Frame for Implementation: Ongoing.

2. Fire Prevention, Suppression and Management Education

Include fire prevention, suppression and management education materials in LMR public education and outreach efforts. Include information on special management actions necessary within the urban/wildland interface. Add guidelines for fire prevention and suppression to future editions of the *Mokelumne River Watershed Owner's Manual*, *Lodi Winegrower's Workbook* and similar stewardship-based publications and programs.

Add links to fire prevention and suppression websites on the LMR website including links that provide guidelines for alternatives to the controlled use of fire for vegetation management.

Include fire prevention planning in restoration efforts undertaken along the LMR.

Time Frame for Implementation: Ongoing.

3. Increase Coordination and Cooperation with PG&E

Establish a contact with PG&E's local vegetation management unit.

Provide an e-mail link on the LMR website to report hazardous vegetation located adjacent to power lines to PG&E.

Inform PG&E when opportunities arise for tree trimming or similar fire prevention

measures to occur from within the river (e.g., from boats).

Time Frame for Implementation: Commence within three years of Plan adoption.

11. Restoration

"We traveled for twenty-eight miles over the same delightful country as yesterday, and halted in a beautiful bottom at the ford of the Rio de los Mukelemnes, receiving its name from another Indian tribe living on the river. The bottoms of the stream are extremely broad, rich, and fertile; and the uplands are shaded with oak groves. A showy lupinus of extraordinary beauty, growing four to five feet in height, and covered with spikes in bloom, adorned the banks of the river, and filled the air with a light and graceful perfume." (Journal of John C. Fremont, March 25, 1844)

BACKGROUND

The journal of John C. Fremont provides a glimpse of the Lower Mokelumne River Watershed in the 1840s. Both Fremont's and other historical accounts paint the following picture of the watershed as it existed between the 1840s and 1930s:

- ✓ Stream flows that vary by as much as 3,000 cubic feet per second or about three feet in height in a single day. Maximum stream flows range as high as 8,800 cfs, with highest flows in April, May and June
- ✓ A diverse mosaic of seasonally inundated lakes and oxbows
- ✓ A floodplain extending a quarter mile to one mile wide and 10-15 feet above the floor of the inner channel
- ✓ Stream flows varying by as much as 3,000 cubic feet per second (a fluctuation of 3.2 feet in height) in a single day

Since those days, agricultural, ranching, mining, urban and other land uses have expanded throughout the watershed. The construction of the Woodbridge Irrigation District Dam in 1901, the completion of Pardee Dam in 1928, and construction of the Camanche Dam in 1963 have further changed the character of today's Lower Mokelumne River Watershed.

Returning the Lower Mokelumne River watershed to a pristine, natural state existing before the arrival of European settlers is, of course, impractical. However, turning back the clock a few years in certain portions of the Lower Mokelumne River Watershed could promote the sustainability of the watershed for generations to come.

Selecting a Reference. Any reference should reflect a balance between past conditions in the watershed and current conditions. The reference should be a time period when land uses were similar to today's land uses. Specifically, the reference should be indicative of a time when agriculture and ranching were the dominant land uses in the watershed. By selecting such a time period, a baseline reference will be established that can be feasibly achieved while causing minimal or no detriment to existing agricultural practices.

As with many undertakings, care should be taken to avoid "reinventing the wheel." In the world of restoration, this is especially true. The most successful restoration efforts are often based on the simplest of concepts--identify what "used to be" and re-create those conditions, if possible.

The Society for Ecological Restoration (SER) publishes guidelines to assist communities in identifying the representative components of a "healthy" system and then identify the physical location or time period in which the subject landscape best exhibited (or exhibits) those characteristics of a healthy, robust, self-sustaining system. The "reference ecosystem," as it is sometimes called, may be an actual physical location found along the banks of a river, a composite of several sites found throughout a watershed, or a site or composite of sites which existed in the past (as reflected in aerial photos or other historical documents). In general, the "reference" is a combination of all of the preceding.

In addition, based on the opinions expressed, goals adopted, physical conditions identified, and community input gathered throughout the preparation of the LMSP, a reference ecosystem best-suited to guiding LMR watershed restoration activities also should:

- ✓ Account for, and mitigate, monitor, and adapt for impacts that restoration will have on current agricultural and rural land uses
- ✓ Take into account pre- and post-dam characteristics
- ✓ Encompass a time period prior to the extensive mining of the 1920s, 30s and 40s which created significant changes to the physical character of the watershed
- ✓ Represent a time period from which historical information is readily available
- ✓ Provide opportunities for evaluating and comparing conditions over time

In 2001, the authors of the Lower Mokelumne River Watershed Stewardship Plan oversaw the production of the *Historical Assessment of the Ecological Condition and Channel Dynamics of the Lower Mokelumne River: 1910-2001* (San Joaquin County RCD/East Bay Municipal Utility District & Humboldt State University Foundation, 2002)—hereinafter "*Historical Assessment*". The *Historical Assessment* provides extensive information, analysis, comparisons and trends for many of the ecological conditions and characteristics of the Lower Mokelumne from 1910 to the present (with special emphasis on the years 1927, 1949 and 2001). The primary purpose of the study was to provide a guide for restoration activities in the Lower Mokelumne River Watershed

and is used here as the primary guide in outlining the first steps in the LMR watershed restoration strategy.

Restoration Reference. The decades from 1910 to 1930 are representative of a time in the river's history in which many of today's land uses were well-established (e.g., agriculture and ranching). At the same time, the effects of Pardee Dam were just beginning to be felt, hence 1910-1930 provides a restoration reference which reflects elements of both the watershed's pre- and post-dam conditions; and it also represents a time prior to the establishment of the watershed's more modern mines.

Five Restoration Zones. Because physical characteristics of the land vary throughout the watershed, historic and current conditions are not the same throughout all locations within the watershed (e.g., land uses differ, the width of riparian buffers differ, and the width of the floodplains vary). Therefore, restoration guidelines which recognize the variability of landscapes in the watershed should be established for individual segments of the watershed sharing similar general characteristics.

The *Historical Assessment* divides the watershed into five primary reaches extending from Camanche Dam to the confluence with the Cosumnes River. These divisions are based both on the availability of data, previous studies conducted in the watershed, and characteristics unique to each reach. For consistency, these same five reaches have been used in defining five restoration references to guide restoration activities between Camanche Dam and the Cosumnes River Confluence. The five restoration zones are listed in the following table:

Restoration Zones

Reach #	Description
Reach 1	Woodbridge Dam to Confluence with the Cosumnes River
Reach 2	Highway 99 Bridge to Woodbridge Dam
Reach 3	Elliot Road Bridge downstream to the Hwy. 99 Bridge
Reach 4	Mackville Road Bridge to Elliot Road Bridge
Reach 5	Camanche Dam Downstream to Mackville Road Bridge

The characteristics of each of these restoration zones are detailed in Appendix A. Those characteristics describing 1910-1930 ecological conditions should be viewed as a restoration reference guide for implementing restoration activities between Camanche Dam and the confluence with the Cosumnes River in the LMR watershed.

GOALS

When achieving these goals, we must remember that all of the constituents of the Lower Mokelumne River Watershed are interrelated and that good stewardship is ensuring support and maintenance for all beneficial uses of the Mokelumne River.

Restore ecosystems in the LMR Watershed:

1. Have a minimal or no impact on current agricultural and rural land uses, and consider and/or mitigate for possible impacts to landowners.

2. Integrates and promotes feasible natural processes through the exchange and flow (at or below established channel capacity) of materials (e.g. gravel, sediment, seeds, etc.) throughout the watershed while avoiding adverse impacts to landowners.

3. Are resilient and can endure normal periodic stresses of the local environment that serve to maintain the integrity of the watershed

4. Are self-sustaining and have the potential to persist indefinitely under existing environmental conditions sustain naturally reproducing populations of species necessary for continued stability or development of the watershed

5. Are consistent with the promotion of accepted sustainable cultural practices within agriculture, ranching, and urban landscaping.

6. Are accepted throughout the watershed and which respect private property rights and encourage voluntary, community- wide participation.

IMPLEMENTATION PROGRAMS:

1. Compile a Vegetation Map

Using the electronic data prepared in conjunction with the 2002 *Historical Assessment* (identified within the assessment as a "gap map") prepare a map illustrating the location of areas where historical occurrences of riparian vegetation are now either devoid of that vegetation or the riparian area is only sparsely vegetated (defined hereafter as a "vegetation gap area"). Also, identify and map areas where non-native, invasive plant species have replaced more beneficial native species. These vegetation gap areas should be targeted as restoration priorities.

2. Adopt Criteria for Establishing Restoration Priorities

The willingness of landowners to participate in undertaking voluntary stewardship activities largely governs where and when restoration activities occur within the watershed (i.e., restoration cannot occur without a willing landowner).

In addition to a willing landowner, projects incorporating one or more of the following criteria also should be pursued as restoration priorities:

A. Lands located within a vegetation gap area as identified in program #1 (consideration for the length of the gap could be used in making priority decisions—i.e., larger gaps are a higher priority than smaller gaps).
B. Land located within a reach which has been underrepresented in previous restoration activities (i.e., undertake restoration activities in all five reaches as equitably as is feasible)
C. Land where restoration plans include the expansion of vegetative buffers 30-40 yards from the river bank and incorporate both forest and shrub communities where such connections are consistent with the reference ecosystem
D. Land where restoration plans include the installation of oxbow lakes or similar structures which re-establish the river/floodplain connection where such connections are consistent with the reference ecosystem
E. Lands occurring in close proximity to other lands which have or will undergo restoration or which otherwise promote the interconnection of systems and exchange of materials throughout the watershed
F. Lands where landowners are receptive to adopting strategies for long-term protection and maintenance of restored land, and where restoration activities are likely to be maintained by the landowner
G. Lands where the landowner is agreeable to monitoring/assessment activities which protect the landowner's property rights
H. Lands which will be subject to fewer intrusions once restoration activities commence (e.g., multiple road crossings)

I. Lands where terrestrial and aquatic invasive species have reduced the occurrence of native vegetation, caused the loss of habitat values for wildlife and fisheries, contribute to the spread of these invasive species to other parts of the watershed, and/or contribute to other problems (e.g. erosion, stream bank or levee destabilization).
J. Lands where man-made materials have been dumped on the stream bank to provide temporary bank protection.
K. Take into account restoration priorities of the Lower Mokelumne River Partnership (EBMUD, CDFG, USFWS).
L. Coordinate with other regional watershed efforts connected to the Mokelumne River system.
M. Project funding is established.

It is anticipated that, over time, the preceding criteria will be amended and new provisions added.

3. <u>Adopt a Format for Restoration Plans</u>

Prepare a master format for restoration plans to facilitate comparisons of various restoration activities, to assist in evaluating the success of various restoration approaches, and allowing landowners and planners the capability of assessing the effectiveness of the restoration process.

Restoration plans should include, at a minimum, the following information:

A. Why is restoration being undertaken at the site?
B. An ecological description of the site
C. Goals and objectives of the landowner and restoration project
D. Designation and description of the reference being used (e.g., 1910-1930, Reach 5 characteristics)
E. Explanation of how the proposed restoration should integrate with the landscape and its flow of organisms and materials;
F. Plans, schedules and budgets for site preparation, installation and post-installation maintenance and other activities, including a strategy for adaptive management (i.e., for making mid-course corrections);
G. Performance standards and monitoring protocols to be used to measure success of the restoration effort over time and plans and schedules for long term management and monitoring of restored sites that do not place an economic burden on landowners.
H. Identify and mitigate for impacts that restoration will have on current ag and rural land uses.

4. **Facilitate Efforts Promoting Recruitment of Native Riparian Vegetation and Establishment of Riparian Buffer Strips**

As a general guide, LMR restoration efforts should emphasize the expansion of riparian buffer strips in the agricultural transition zone. Buffer strips should include both forest and shrub communities. (*Historical Assessment*, 2002, p. 23)

Design methods, plant lists, erosion control methods, and other useful restoration aids are detailed in LMSP Elements 6, 11, 14 and 15.

Restoration plans should include provisions for providing a multitude of vegetative stages ranging from early vegetative to late vegetative stages consistent with the Reference ecosystem. As noted in the preceding program, additional information relative to this aspect of restoration may be necessary for successful implementation.

5. **Reestablish Connections between the Lower Mokelumne River and its Floodplain**

With willing landowners, the potential exists to reestablish some connections between the LMR and its historical floodplain. The boundary between aquatic (e.g., river) and terrestrial (e.g., dry land, upland, floodplain) environments is a major source of nutrients and organic matter. Periodic inundation of terrestrial environments resulting from high flows connects the floodplain to the river and provides the primary means for the exchange of nutrients and energy between aquatic and terrestrial environments.

6. **Facilitate Levee and Streambank Stabilization**

Restoration plans should recognize the use of native trees, shrubs, and grasses with deep root systems to control erosion. The use of bioengineered stabilization should be preferred due to its other beneficial uses within the ecosystem. (See also implementation programs in Element 7)

7. **Identify and Fill Data Gaps as Necessary to Refine Restoration Efforts**

Additional detail should be gathered to further refine plant lists used in restoration efforts for biological resources. Information relative to animal diversity may be extrapolated from surveys conducted at existing sites reminiscent of 1910-1930 conditions. In addition to providing guidance for restoration efforts, this information should be incorporated into plans for monitoring the success of restoration efforts.

Additional descriptive information, in particular historical information, relative to the structure of vegetative communities within the five defined reaches of the LMR Watershed should be collected to enhance the level of detail available for preparing and implementing restoration plans.

8. **Encourage Native Species, Control Non-Native Invasive Species**
Encourage the composition of native species found in the appropriate reference ecosystem to the greatest extent practicable. Control of non-native invasive species (see program #10), the establishment of multiple vegetative stages (program #4), the re-establishment of buffer strips (Program #4) and completion of program #7 (collecting additional data relative to species composition) are expected to collectively implement this program.

9. **Adopt Criteria for Evaluating the Success of Restoration Activities**
Establish guidelines to evaluate the success of the LMR Watershed restoration program. Activities which should be considered for inclusion include:

- ✓ Establish a control Select at least one pre-restoration property within each reach which will not be subject to restoration activities to assist in comparing changes in restored versus un-restored properties.

- ✓ Establish performance goals for restoration sites Adopt measurable goals for evaluating the success of restoration activities to facilitate better planning for future restoration efforts (e.g., 20% increase in species diversity; 80% survival of plants).

- ✓ Adopt a Monitoring Strategy Monitoring strategies to be considered include:
Direct comparison: Selected criteria (e.g., number of bird species, plant canopy structure) that are measured in the control property and compared with the restoration site.. Up to 20-30 different criteria can be measured. Monitoring riparian birds should be a top consideration as they are quick to respond to habitat changes (RHJV 2000, Geupel et al 2001)

  Attribute analysis: The attributes of the site are assessed in relation to whether or not each of the following goals has been achieved (in relation to the reference ecosystem): characteristic assemblage of species, indigenous species, functional groups necessary for continued development and stability of the ecosystem are represented; restored site is capable of sustaining reproducing populations; restored site apparently functions normally for its ecological stage of development; system is suitably integrated into a larger landscape; potential threats to health and integrity have been eliminated or reduced; ecosystem is sufficiently resilient endure normal period stress events; system is self-sustaining.

  Trajectory analysis: This method is relatively new and requires monitoring over time and analysis of data to establish trends. Trends tending towards the reference ecosystem indicate success.

10. Implement Related LMSP Programs

Additional programs, already included in the Lower Mokelumne River Watershed Stewardship Plan, should be integrated with restoration activities undertaken pursuant to this element. These programs include:

- **Provide Representation from the LMSP to the Tri-County Weed Management Area (WMA) Committee to Foster Control of Non-Native Invasive Species** (Element 4 - Agriculture, Program #1; Element 5 - Biological Resources, Program #6)

- **Promote Weed Management, Integrated Pest Management, and Other Vegetation Management Practices which Promote Resource Conservation - *"Bringing Farm Edges Back to Life!"*** (Element 4 -Agriculture, Program #2)

- **Encourage Establishment of a Voluntary "River-Adjoining-Land Use" Transition Zone Program** (Element 4 - Agriculture, Program #7; Element 5- Biological Resources, Program #8)

- **Promote Improvement of Spawning Habitat for Salmon and Steelhead** (Element 5, Biological Resources, Program #1)

- **Support the Study of Salmon and Steelhead Survival Rates in the Lower Mokelumne** (Element 5, Biological Resources, Program #2)

- **Support Surveys** (Element 5, Biological Resources, Program #3)

- **Promote and Encourage Landowner Participation in Lower Mokelumne River Riparian Restoration Projects** (Element 5- Biological Resources, Program #4)

- **Identify Opportunities for Coordination with San Joaquin County's County-Wide Habitat Conservation Plan** (Element 5, Biological Resources, Program #5)

- **Encourage Submittal of Funding Requests to the Lower Mokelumne River Partnership's Partnership Fund** (Element 5, Biological Resources, Program #10)

- **Facilitate Efforts to Monitor the Success of Water Quality Improvement Programs and to Fill Existing Needs/Data Gaps** (Element 6-Water Quality, Program #4)

- **Facilitate the Formation of a Voluntary Water Quality Monitoring Coalition Consisting of Watershed Stakeholders** (Element 6-Water Quality, Program #5)

- **Participate in TMDL Planning Efforts** (Element 6-Water Quality, Program #6)

- **Promote Voluntary Management Practices which Reduce Erosion Potential While Promoting Resource Conservation** (Element 6, Water Quality, Program #7 and Appendix 6E)

- **Facilitate Debris Redistribution** (Element 7, Flood Control, Program #1)

- **Facilitate Voluntary Landowner Participation in Implementing Management Practices Promoting Resource Conservation Offered through or Resulting from the Lower Cosumnes-Mokelumne Rivers Feasibility Study** (Element 7, Flood, Program #9)

- **Promote the use of Native Grasses and Other Native Plants in Restoration and Landscape Projects** (Element 7, Flood Control, Program #10)

- **Investigate the Potential Economic Development Benefits of Mokelumne River Watershed Resource Conservation & Development District** (Element 9, Economics, Program #1)

- **Promote Resources-Based Tourism for Economic Development** (Element 9, Economics, Program #2)

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12. Watershed Stewardship in Action

The following publications provide specific actions which can be undertaken by individuals at home, on the farm and on the ranch. Descriptions and ordering information for these publications are provided. Additional publications are listed in Chapter 15.

Lodi Winegrower's Workbook

The *Lodi Winegrowers Workbook* is a publication of the Lodi-Woodbridge Winegrape Commission, authored by Clifford P. Ohmart, Ph.D., and Steve Matthiasson, M.S., in 2000. The publication guides winegrape growers in evaluating their farms in the following categories:

- **Viticulture**
- **Soil Management**
- **Water Management**
- **Pest Management**
- **Habitat**
- **Human Resources**
- **Wine Quality**
- **And More...**

Once evaluations are completed, farmers prepare and implement action plans, if necessary, to realize optimal conditions in each of these resource categories.

Copies may be purchased for $70.00 + $10.00 S&H + $5.43 tax from the Lodi - Woodbridge Winegrape Commission via phone, fax, mail order or website:

Phone: (209) 367-4727
Fax: (209) 367-0737
Website: lodiwine.com
Mail: Lodi-Woodbridge Winegrape Commission
2545 West Turner Road
Lodi, CA 95242

Mokelumne River Watershed Owner's Manual

The ***Mokelumne River Watershed Owner's Manual*** is a voluntary, stewardship-based workbook which assists residents of the LMR watershed in reducing non-point source pollution. The manual was adapted by permission from *Home*A*Syst: An Environment Risk Assessment Guide for the Home* © 1997 by the Regents of the University of Wisconsin System and with the cooperation of the Northeast Regional Agricultural Engineering Service. RCD Watershed Coordinator, John Brodie, wrote, edited and tailored the manual to the Mokelumne River Watershed in 2002. Collaborating authors include Alyson McCann, Carl DuPoldt, Carolyn Johnson, Bill McGowan, Barbara Kneen Avery, Elaine Andrews, Karen Filchak, Richard Castelnuovo, Dean Solomon, Shirley Niemeyer, Michael P. Vogel, and Kathleen Parrott.

Topics address evaluating your property and formulating action plans to:

- **Manage stormwater**
- **Reduce pollutants in runoff**
- **Manage landscaping and property to reduce runoff and pollutants**
- **Manage wells used for drinking water**
- **Locate and maintain wells**
- **Manage household wastewater and septic/sewer systems**
- **Manage hazardous household products**
- **Guide proper disposal of household products**
- **Maintain your swimming pool**
- **And much more…**

Copies may be purchased for $15.00 + S&H from the San Joaquin County Resource Conservation District via phone, fax, mail order or website:

Phone: (209) 946-6465 Extension 125
Fax: (209) 946-6036
Website: www.sjcrcd.org
Mail: Attention: Watershed Coordinator
1222 Monaco Court, Suite 23
Stockton, CA 95207

Horses for Clean Water

Healthy Horses for Clean Water – A Guide to Environmentally Friendly Horsekeeping for Equine Businesses was produced by the organization "Horses for Clean Water" in partnership with Rainier Audubon Society and the King County Department of Natural Resources. Alayne Renee Blickle was the manual's producer and principle author. The guide was published in 2000.

The manual assists equine businesses by addressing:

- **Manure Management**
- **Mud Management**
- **Pasture Management**
- **Stream & Wetland Management**
- **Wild-Land Management**
- **Horses and the Law**
- **And more...**

The publication costs $43.28 plus $3.28 shipping + WA state sales tax (.082) and can be ordered by mail with a check payable to HCW (Horses for Clean Water) at

17717 252nd Ave SE
Maple Valley, WA 98038
(425) 432-6116

The manual also may be downloaded for free from the Puget Sound Water Quality Action Team website.

Or,

By contacting the Snohomish Conservation District at (425) 335-5634, Extension 4.

Horses for Clean Water also has produced ***Tips on Land and Water Management for Small Farm and Livestock Owners in Western Washington.***

This manual includes chapters on mud management, manure management, pasture management, Weed Management, Wildlife Management, Woodlot Management, Compost bins and more.

To request copies, contact the King Conservation District. 935 Powell Ave. SW, Renton, WA 98055; (206) 764-3410.

13. Funding

A few of the potential funding sources for some of the LMSP programs include:

American Sport fishing Association Fish American Foundation (FAF) and the National Oceanic and Atmospheric Administration (NOAA) – offers funding for community based restoration programs for on-the-ground habitat restoration in marine, estuarine and anadromous fish habitats. $5,000-$30,000. NOAA Fisheries Restoration Center, HC-3, RM 15322; 1315 East West Highway; Silver Spring, MD 20910 (301) 713-0174 Ext. 200. www.nmfs.noaa.gov/habitat/restoration/community/index.htm.

California Resources Agency - California Department of Parks and Recreation , Planning and Local Services Section - Habitat Conservation Fund. P.O. Box 942896; 1416 Ninth St., Sacramento, CA 94296-0001; (916) 653-7423 or visit http://parks.ca.gov/grants/hcf/hcf.htm

California Resources Agency - California Department of Parks and Recreation Recreational Trails Program Grants. Contact (916) 651-8572 or http://parks.ca.gov/grants/rtp/rtp00.htm

California Resources Agency – Environmental Enhancement and Mitigation Fund Program (EEM) Grants for acq1uisition, restoration or enhancement of watersheds, wildlife habitat, wetlands and forests. Grants generally limited to $250,000. Contact (916) 653-5656 or http://ceres.ca.gov/cra/eemp_new.html

California Department of Conservation Division of Land Resource Protection - California Farmland Conservancy Program (CFCP). Contact (916) 322-9721 or be e-mail at CFCP@consrv.ca.gov.

California Department of Conservation Resource Conservation District Assistance Grant Program. Contact the Division of Land Resource Protection. (916) 324-0774

CALFED – Various, including the CALFED Ecosystem Restoration Program and Watershed Program. See www.calfed.ca.gov for details and deadlines.

Great Valley Center – LEGACI Program: Offers grants which address and integrate land use, economics, agriculture, and other interrelated resources. Contact (209) 522-5116. See **www.greatvalley.org.**

Mokelumne River Partnership – Partnership Fund– East Bay Municipal Utility District, U.S. Fish and Wildlife Service and the CA Dpt. of Fish and Game established a Lower Mokelumne River Partnership to protect and enhance the anadromous fishery and

Mokelumne River ecosystem. A Partnership Fund provides grants ranging from $600 to $50,000. Contact: East Bay Municipal Utility District; 1 Winemasters Way, Suite K; Lodi, CA 95240.

National Association of Conservation Districts – Conservation Incentives Program (CIP) – visit www.nacd.org

National Fish and Wildlife Foundation – extensive list of grants for resource conservation activities. Contact (415) 778-0999 or visit www.nfwf.org/programs/guidelines.htm

Northwest Water Law and Policy Project. Video to assist communities in securing funding for restoration projects in local streams and watersheds. Call (503) 768-6761 or e-mail water@lclark.edu

Proposition 13 (Costa-Machado Water Act of 2000). Includes: State Water Resources Control Board (SWRCB) Watershed Protection program, SWRCB Nonpoint Source Pollution Control Program, CALFED Watershed Program and the CALFED Drinking Water Quality Program. Contact the State Water Resources Control Board Division of Water Quality (916) 341-5455 or visit www.swrcb.ca.gov/prop13/index.html

United States Department of Agriculture Natural Resources Conservation Service – Conservation Programs. Extensive list of funding sources and assistance programs: Conservation Technical Assistance, Environmental Quality Incentives Program (EQIP), Wetlands Reserve Program (WRP), Wildlife Habitat Incentives Program (WHIP), Forestry Incentives Program (FIP), Farmland Protection Program (FPP), and many more. www.nhq.nrcs.usda.gov/PROGRMAS/cpindex.htm

United States Fish and Wildlife Service Small Wetlands Grants, under $50,000. Contact (703) 358-1784 or visit http://northamerican.fws.gov/NAWCA/smgrants.htrml

14. Glossary & Abbreviations

Glossary

Certified Local Government
A certified local government is a local government (e.g., a City or County) which has adopted a cultural resources element consistent with the guidelines of the Secretary of the Interior and has applied for and received a designation as a Certified Local Government. Certified Local Governments (CLGs) are granted authority for reviewing various cultural resources projects which might otherwise require federal review. In addition, CLGs may receive special grants for cultural resources activities.

Class I (Bike Facility)
A Class I Bike facility is generally a 10'-12' pathway completely separate from motor vehicle facilities by space or by a physical barrier identified by guide signing and/or pavement markings.

Class II (Bike Facility)
A Class II Bike facility is generally a 5' to 8' lane located on the edge of a road identified by BIKE LANE/BIKE ROUTE signing, special lines, or pavement markings.

Class III (Bike Facility)
A Class III Bike facility is identified by BIKE ROUTE signing only. Bicycle traffic shares the roadway with motor vehicles.

Mills Act
The Mills Act is legislation which authorizes local governments to adopt a special program which allows reduced property taxation for approved rehabilitations of historic structures.

Marks Historical Rehabilitation Act
The Marks Historical Rehabilitation Act, Health and Safety Code Sections 37600-37883, provides incentives for the rehabilitation of cultural resources.

Non-Project (levee):
A non-project levee is one which was not constructed by and is not maintained by the United States Army Corps of Engineers. These levees are privately maintained by landowners or as part of a reclamation district.

Tier One
The Non-Point Source Management Plan (NPS) being implemented by the California Water Quality Control Board promotes a three-tiered approach to reducing non-point source pollution. "Tier One" is the self-determined implementation of management practices where landowner and resource managers develop and implement workable solutions to non-point source pollution. This affords them the opportunity to solve their own problems before more stringent regulatory actions are taken. The California Farm Bureau Federation and the California Cattleman's Association have both developed programs intended to implement this Tier One approach.

Abbreviations

BIFS	**Biologically Integrated Farming Systems**
BIOS	**Biologically Integrated Orchard Systems**
BMI	**Benthic Macro Invertebrates**
CDFG	**California Department of Fish and Game**
CDQAP	**California Dairy Quality Assurances Program**
CFS	**Cubic Feet Per Second**
COG	**Council of Governments**
CVPIA	**Central Valley Project Improvement Act**
CVWS	**Central Valley Waste Services**
DLBP	**Downtown Lodi Business Partnership**
EBMUD	**East Bay Municipal Utility District**
EIS	**Environmental Impact Statement**
FEMA	**Federal Emergency Management Agency**
FERC	**Federal Energy Regulatory Commission**
FIRM	**Flood Insurance Rate Map**
IPM	**Integrated Pest Management**
LMR	**Lower Mokelumne River**
LMSP	***Lower Mokelumne River Watershed Stewardship Plan***
LWWC	**Lodi-Woodbridge Winegrape Commission**
NPS	**Non-point Source Pollution**
NRAES	**Northeast Regional Agricultural Engineering Service**
NRCS	**Natural Resources Conservation Service**
RCD	**Resource Conservation District**
RC&D	**Resource Conservation & Development District**
SAFCA	**Sacramento Area Flood Control Agency**
SAREP	**Sustainable Agricultural Research & Education Program**
SJCRCD	**San Joaquin County Resource Conservation District**
SJMSCP	**San Joaquin County Multi-Species Habitat Conservation & Open Space Plan**
TMDL	**Total Maximum Daily Load**
USDA	**United States Department of Agriculture**
USFWS	**United States Fish and Wildlife Service**

WHIP	**Wildlife Habitat Incentives Program**
WID	**Woodbridge Irrigation District**
WMA	**Weed Management Area**

15. Bibliography

California State University, Chico - *Working at the Watershed Level* (Course Notebook) - Jan 11-15, 1999, CSU Chico.

CALFED, *Ecosystem Restoration Program Plan*, June 25, 1999 Vols 1-8; Visions for Ecosystem Elements and Vol II (1997) - Ecological Zone Visions.

California Coordinated Resource Management and Planning Technical Advisory Committee, *California Coordinated Resource Management and Planning CRMP Handbook, AA Local Approach,@* June, 1996.

California Department of Fish and Game, *Lower Mokelumne River Fisheries Management Plan*, 1991 (Located - Pending Receipt).

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California Partners in Flight et. al., *The Draft Riparian Bird Conservation Plan: A Strategy for Reversing the Decline of Birds and Associated Riparian Species in California*, December 15, 1998.

Dagget, Dan, *A Workbook Guide to Beyond the Rangeland Conflict*, (Undated).

East Bay Municipal Utility District, *Watershed Management Dos and Don=ts*, August, 1997 (CERES/WITS).

East Bay Municipal Utility District, *A Preliminary Angler Survey of the Lower Mokelumne River Between Its Confluence With the Consumnes and San Joaquin Rivers*, September 12-October 22, 1998.

East Bay Municipal Utility District, (See FERC) - *Lower Mokelumne River Project Joint Settlement Agreement.*

Federal Energy Regulatory Commission, Lower Mokelumne River Project Joint Settlement Agreement (FERC Project # 2916-004)

Getches, David H., *Some Irreverent Questions About Watershed-Based Efforts* (Undated), Chautauqua.

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Lathrop, Margaret L. July, 1992. *The History of Clements*. Valley Publications, Lockeford, CA.

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Mann, Stephen J. with Valdene Valenti and Christi Kennedy. 1991. *Lodi: The Early Years, Volume II.* Delta Publishing Company.

Mann, Stephen J. with Christi Kennedy and Valdene Valenti. 1987. *A History of the Lodi Grape Festival.* Delta Publishing Company.

Napa County Resource Conservation District, *Napa River Watershed Owner=s Manual*, 1996.

The Nature Conservancy, *Upper Flood plain Management Plan* - Cosumnes River

San Francisco Estuary Project, *Draft CCRMP Workbook-Comprehensive Conservation and Management Plan for the Bay-Delta Implementation Progress 1996-1998*, January 1999.

University of California Division of Agriculture and Natural Resources, Publication 21577, *Vineyards in an Oak Landscape, Exploring the Physical, Biological, and Social Benefits of Maintaining and Restoring Native Vegetation in and around the Vineyard*, 1998.

United States Environmental Protection Agency, *Top 10 Watershed Lessons Learned*, Publication 840-F-97-001, October, 1997.

U.S. Fish and Wildlife Service, *Revised Draft Restoration Plan for the Anadromous Fish Restoration Program, A Plan to Increase Natural Production of Anadromous Fish in the Central Valley of California*, May 30, 1997

U.S. Fish and Wildlife Service, *Recovery Plan for Upland Species of the San Joaquin Valley*, 1997.

U.S. Fish and Wildlife Service, *Recovery Plan for the Sacramento/San Joaquin Delta Native Fishes*, November, 1996.

William M. Kier Associates, *Watershed RestorationBA Guide for Citizen Involvement in California.* NOAA Coastal Ocean Program Decision Analysis Series No. 8 (CERES/WITS) B Assistance Checklist, A Word About Best Management Practices

16. Watershed Resources & References

Links to Other Organizations and Information

Management Practices Promoting Resource Conservation

Home*A*Syst/Farm*A*Syst Program. These are model stewardship-based programs for homeowners and farmers assisting in the conservation of agricultural and natural resources. The program is a cooperative effort between the Northeast Regional Agricultural Engineering Service (NRAES) and the University of Wisconsin. For more information: NRAES, Cooperative Extension, 152 Riley-Orb Hall, Ithaca, NY 14853-5701; (607) 255-7654. The San Joaquin County Resource Conservation District, with the cooperation of the NRAES has adapted the Home*A*Syst model into a watershed owner=s manual for the Lower Mokelumne River . For more information:
www.nraes@cornell.edu, **Homeasys@uwis.edu**

Horses for Clean Water. Publishes *Healthy Horses, Clean Water -Horses for Clean Water* - a program developed by horse owners for horse owners to promote horse health and environmental health.
www.horsesforcleanwater.com

Lodi-Woodbridge Winegrape Commission – Winegrower's Workbook. View on-line and/or order your copy of the groundbreaking *Lodi Winegrowers Workbook* promoting farm stewardship for vineyard owners and managers.
www.lodiwine.com

National Stormwater Best Management Practices Database. Database of BMP performance data for over 150 BMP studies. Developed by the Urban Water Resources Research Council.
www.bmpdatabase.org

San Joaquin County Resource Conservation District Lower Mokelumne River Watershed Stewardship Plan. www.sjcrcd.org

University of California, Davis B Rangeland Watershed Program Provides extensive links and information for managing rangelands to conserve resources.
http://agronomy.ucdavis.edu/calrng/RWP.html

United States Environmental Protection Agency – Stream Monitoring: On-line guide for developing a citizen water-quality monitoring program, V*olunteer Stream Monitoring*.
www.epa.gov/volunteer/stream/index.html

Yolo County Resource Conservation District. Order your copies of these excellent publications: *Bring Farm Edges Back to Life! How to Enhance Your Agriculture and Farm Landscape with Proven Conservation Practices for Increasing the Wildlife Cover on Your Farm; Know Your Natives: A Pictorial Guide to California Native Grasses* **www.yolorcd.ca.gov**

Lower Mokelumne River & Other Watershed Stewardship Information

California Environmental Resources Evaluation System (CERES). Information on San Joaquin County=s flood conditions, demographics, land uses, historical and cultural resources, recreation, special status species, water resources, vegetation and habitats with maps, photos and other documents. **www.ceres.ca.gov/geo_area/counties/San_Joaquin/**

California Rivers Assessment. Provides extensive information and links describing the status of California Rivers and their resources. www.endeavor.des.ucdavis.edu/newcara/

Central Sierra Watershed Coalition. Grass roots organization for the protection and eco-restoration of the five rivers of the central Sierra Nevada: Mokelumne, Calaveras, Stanislaus, Tuolumne and Merced. **www.cswc.org**

City of Lodi.s Storm Drain Detectives. A citizen volunteer and education program monitoring water quality along the lower Mokelumne River, including Lodi Lake. **www.lodi.gov/Storm%20Drain%20Detectives/index.htm**

Mokelumne-Cosumnes Watershed Alliance. Provides oversight for and links to multiple watershed planning efforts ongoing for the Mokelumne and Cosumnes River watersheds. **www.mcwatershed.org**

National Association of Conservation Districts. Environmental Education links. **www.nacdnet.org/resources/links.htm#EviEd:**

City of Sacramento Stormwater Management Program. Good information on stormwater management including information for teachers and programs for volunteers to protect water quality. **www.sacstormwater.org**

Sacramento-San Joaquin Delta Atlas. On-line copies of the Sacramento-San Joaquin Delta Atlas. Extensive photos, history and resource information for the Delta. **http://rubicon.water.ca.gov/delta_atlas.fdr/daindex.html**

San Francisco Estuary Project ß s State of the Estuary Reports. Link is to the Bay/Delta Estuary=s biological resources report. www.abag.ca.gov/bayarea/sfep/reports/soe/soe4a.htm

San Joaquin County Resource Conservation District Lower Mokelumne River Watershed Stewardship Plan. www.sjcrcd.org

Shodor Education Foundation, Inc.: Surface Water Runoff Modeling. Examining the effect of soil type, ground cover type, and rainfall amount on the quantity of water runoff. **www.shodor.org/master/environmental/water/runoff/index.html:**

UC Davis Information Center for the Environment. A collaboration of UC Davis scientists and private, state, federal and international resource agencies and efforts. Provides extensive links related to resource conservation and programs. **www.ice.ucdavis.edu**
UC Davis Land, Air & Water Resources Department. Link to Dr. G. Pasternack=s research on the Mokelumne River Salmon Spawning Gravel Restoration project. Includes Areal-time@ link to stream conditions at the Camanche Reservoir. **http://lawr.ucdavis.edu/faculty/gpast/mokelumne.html**

U.S. Environmental Protection Agency.s Office of Ground Water and Drinking Water Quality. Provides extensive information on water quality and non-point source pollutants. **www.epa.gov/OGWDW/**

U.S. Environmental Protection Agency Office of Water. Extensive links to all aspects of water quality including laws and regulations, funding opportunities, publications and more. **www.epa.gov/ow/**
U.S. Environmental Protection Agency Office of Water Watershed Protection Division. Includes funding, databases, publications, outreach and other information links for watershed planners.

www.epa.gov/owow/watershed/

U.S. Environmental Protection Agency-s ASurf Your Watershed@ site. Excellent source to find out all about your watershed (e.g., size, boundaries, water quality, threats, land uses). **www.epa.gov/surf/**
U.S. Environmental Protection Agency Watershed Information Network (WIN). Roadmap to information and services for protecting and restoring water resources. **www.epa.gov/win/**

United States Geological Survey site providing information on water resources of the United States. **http://water.usgs.gov**

Watershed Management Council. Non-profit educational organization dedicated to the advancement of the art and science of watershed management. Lots of watershed links. **www.watershed.org**

Flooding & Water Supply – Mokelumne River

CA Dpt. Of Water Resources, California Data Exchange Center. With link to the Division of Flood Management. Provides detailed flow and flood stage information for the Lower Mokelumne River and Cosumnes River. **http://cdec.ca.gov/**

CA Department of Water Resources Division of Flood Management, California Data Exchange Center. Provides flow and flood stage information. Listed site is for the Cosumnes River.
www.cdec.water.ca.gov/river/cosumnesStages.html

East Bay Municipal Utility District. Provides East Bay Municipal Utility District=s water supply reports for the Lower Mokelumne River Watershed.
www.ebmud.com/info/water_supply_reports/default.htm

East Bay Municipal Utility District-s Emergency Preparedness Office (EPO) site. In case of earthquake or flood, the EPO action plan is designed to protect the community. For more information: (510) 287-1259.
www.ebmud.com/emergency/emergency.html:

Education

Humboldt State University Foundation. The San Joaquin County Resource Conservation District, in cooperation with the East Bay Municipal Utility District and the non-profit Humboldt State University Foundation is funding a geographic information system mapping and research program for one of Humboldt State University=s graduate student. The study will provide the SJCRCD with valuable information related to the historic flooding and vegetation patters along the Lower Mokelumne River.
www.humboldt.edu/~hsuf/

City of Lodi-s Storm Drain Detectives. A citizen volunteer and education program monitoring water quality along the lower Mokelumne River, including Lodi Lake.
www.lodi.gov/Storm%20Drain%20Detectives/index.htm

San Joaquin County Office of Education. The Science and Special Programs Department of the Office

of Education is implementing a Delta studies program with the assistance of funding from CALFED. www.sjcoe.org

San Joaquin County Resource Conservation District Lower Mokelumne River Watershed Stewardship Plan. www.sjcrcd.org

Organizations:

California Department of Conservation Division of Land Resource Protection Resource Conservation District Assistance Program. This state agency has successfully secured funding for the state=s Resource Conservation Districts to assist in watershed planning and implementation. This organization funded a watershed coordinator position for the San Joaquin County RCD. www.consrv.ca.gov/dlrp/RCD/index.htm

California Farm Bureau Federation. www.cfbf.com

Delta Protection Commission (DPC). State agency with oversight of land use and planning for the Sacramento-San Joaquin Primary Zone of the Delta. The San Joaquin County RCD is working with the DPC to determine the feasibility of establishing a Resource Conservation & Development District (RC&D) www.delta.ca.gov

East Bay Municipal Utility District. EBMUD operates the Camanche reservoir and dam which forms the eastern boundary of the Lower Mokelumne River Watershed. EBMUD, in cooperation with the U.S. Fish and Wildlife Service, CA Dpt. Of Fish and Game implements the Lower Mokelumne River Partnership Fund which makes small grants available for organizations interested in undertaking projects which promote the health of the Lower Mokelumne River. www.ebmud.com

East Bay Municipal Utility District. *A Historical Perspective of the Mokelumne River Watershed.* www.ebmud.com/services/environmental/fwhistory.html:

City of Lodi site promoting tourism and the economy of the City of Lodi. Good links to the wine-tasting region of northern San Joaquin County. www.visitlodi.com

City of Lodi government site. Provides links to the City of Lodi=s Storm Drain Detectives site and to other departments involved in water quality management, solid waste management and similar resource-related activities.
www.lodi.gov/

Lodi-Woodbridge Winegrape Commission. View on-line and/or order your copy of the groundbreaking *Lodi Winegrowers Workbook* promoting farm stewardship for vineyard owners. www.lodiwine.com

Point Reyes Bird Observatory. This organization is currently assisting in gathering information on the status and distribution of birds along the Cosumnes River and the Lower Mokelumne River. www.prbo.org

San Joaquin County Agricultural Commissioner.s Office. Valuable local resource for farmers and the public-at-large. Provides extensive information related to the use of pesticides. www.co.san-joaquin.ca.us/agcomm/

San Joaquin Farm Bureau Federation. Organization dedicated to ensuring the growth of the rural economy, protecting the family farm and maintaining natural resources. www.sjfb.org

San Joaquin County official government site. **www.san-joaquin.ca.us**

San Joaquin County Resource Conservation District. www.sjcrcd.org

Stockton. Official site for the City of Stockton Convention and Visitor=s Bureau. **www.visitstockton.org/**

University of California Cooperative Extension B S San Joaquin County office. Provides extensive assistance with farm and ranching operations in San Joaquin County. **http://cesanjoaquin.ucdavis.edu**

United States Department of Agriculture B official site. **www.usda.gov**

United States Department of Agriculture Natural Resources Conservation Service, California. **www.ca.nrcs.usda.gov:**

United States Department of Agriculture/Natural Resources Conservation Service, national site. **www.nrcs.usda.gov**

United States Department of Agriculture Natural Resources Conservation Service Plant Materials Center B Lockeford, CA. The PMC assists in all aspects of managing vegetation for crops, rangeland, bioengineering, wildlife, urban/rural interfacing and other activities necessary to help you reach your conservation goals.
http://Plant-Materials.nrcs.usda.gov/capmc/index.html

FundingFunding

CALFED Bay Delta Program. This organization provided funding for the preparation of the Lower Mokelumne River Watershed Stewardship Plan and this website. **www.calfed.water.ca.gov**

California Department of Conservation Division of Land Resource Protection. This state agency has successfully secured funding for the state=s Resource Conservation Districts to assist in watershed planning and implementation. This organization funded a watershed coordinator position for the San Joaquin County RCD.
www.consrv.ca.gov/dlrp/RCD/index.htm

National Fish and Wildlife Foundation (NFWF). Non-profit organization providing funding for various resources management activities. NFWF has provided funding to the San Joaquin Resource Conservation District in support of the RCD=s vernal pool education program. **www.nfwf.org**

U.S. Bureau of Reclamation Mid-Pacific Region. This agency oversees implementation of the Central Valley Project Improvement Act. This program has provided funding to the San Joaquin RCD to assist in the acquisition of vernal pool habitat used for educational purposes. **www.mp.usbr.gov/**
U.S. Office of Management and Budget. Provides on-line forms necessary for most federal grant applications.

www.whitehouse.gov/omb/grants/index.html

Other Resource Conservation District Organizations

California Association of Resource Conservation Districts. Provides support to California=s resource conservation districts. If you are interested in starting a resource conservation district in your area, this is your first contact. **www.carcd.org**

California Department of Conservation Division of Land Resource Protection. This state agency has successfully secured funding for the state=s Resource Conservation Districts to assist in watershed planning and implementation. This organization funded a watershed coordinator position for the San Joaquin County RCD.
www.consrv.ca.gov/dlrp/RCD/index.htm

National Association of Conservation Districts. This agency assists local RCDs by promoting national legislation consistent with the goals of the Resource Conservation District program. **www.nacdnet.org**

San Joaquin County Resource Conservation District. www.sjcrcd.org

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