Watershed Information Center & Conservancy of Napa County

Members
Diane Dillon
Mark Luce
Michael Novak*
Steven Rosa
Mark Van Gorder
Gary Kraus
Leon Garcia
Jim King
Jeff Reichel
Phill Blake
Don Gasser
Kate Dargan
Jeffrey Redding
Robert Steinhauer
Charles Slutzkin
Marc Pandone
Chris Sauer
**pending confirmation*

Alternate
Harold Moskowite

AGENDA

REGULAR BOARD MEETING

Thursday, August 23, 2007
4:00 p.m.

2nd Floor Conference Room, Hall of Justice Building,
1125 Third Street, Napa CA

Staff Representatives

Patrick Lowe,
Secretary
Deputy Director,
Conservation Div., CDPD

Jeff Sharp,
Watershed Coordinator
Planner III,
Conservation Div., CDPD

Laura Anderson,
Counsel
Attorney IV,
County Counsel's Office

1. **CALL TO ORDER & ROLL CALL** (Chairman)

2. **APPROVAL OF ACTION MINUTES**
   None at this time (Chairman)

3. **PUBLIC COMMENT**
   In this time period, anyone may comment to the Board regarding any subject over which the Board has jurisdiction, or request consideration to place an item on a future Agenda. No comments will be allowed involving any subject matter that is scheduled for discussion as part of this Agenda. Individuals will be limited to a three-minute presentation. No action will be taken by the Board as a result of any item presented at this time. (Chairman)

4. **ANNOUNCEMENTS** (Board/Staff)

   a. **2007 California Watershed Forum** – A roundtable discussion to create a statewide watershed program, September 20, 2007, Sacramento (Staff)

   b. Others (Board/Staff)

5. **UPDATES/REPORTS:**

   a. Update on **grant award** to Napa County for **$394,000.00 to support the County's Watershed Assessment Framework** proposal, submitted to the 2007 DWR/CALFED Watershed Grant Program. (Staff)

   b. **American Canyon Middle School** interested in **utilizing WICC WebCenter** to support science instruction and restoration of nearby creek (Staff)

   c. Others (Board/Staff)

6. **UPDATE AND DISCUSSION:**

   a. Update and discussion on pending **State Board approval of Pathogen Total Maximum Daily Loads (TMDLs)** for the Napa River, the **Regional Water Quality Control Board's Basin Planning** process, and other State and Regional water quality policy developments (Staff)

   b. Update on the County **General Plan Update** process and timeline, and **Steering Committee activities** (Staff)

7. **DISCUSSION AND POSSIBLE ACTION:**

   a. *Continued from July 26, 2007*: Discussion, consideration and possible direction authorizing the Chair to submit **comments on the County's Draft General Plan Update** relating to watershed management and water quality matters as recommended by the WICC Sub-committee (Sub-committee Members/Staff)

   b. Discussion, direction and possible **recommendation to the Board of Supervisors regarding ways to encourage conservation of water resources** during drought or dry water-years to protect sensitive aquatic resources in the Napa River and its tributaries (Staff)

8. **PRESENTATION AND DISCUSSION – NAPA RIVER SALMON MONITORING PROJECT:**

   A presentation and discussion of the **Napa River Salmon Monitoring Project Spawning Year 2006 Report**, by Jonathan Koehler, Fisheries Biologist with the Napa County Resource Conservation District (Staff/RCD)

9. **FUTURE AGENDA ITEMS** (Board/Staff)

   a. **Hyper Spectral Imaging** – Update on test application in Napa County (possibly September meeting)

   b. Others (Board/Staff)

10. **NEXT MEETING:**

    Regular Board Meeting: <u>September 27, 2007 – 4:00 PM</u>
    Hall of Justice Building, 2nd floor Conference Room, 1125 Third Street, Napa

11. **ADJOURNMENT** (Chairman)

Note: If requested, the agenda and documents in the agenda packet shall be made available in appropriate alternative formats to persons with a disability. Please contact Jeff Sharp at 707-259-5936, 1195 Third St., Suite 210, Napa CA 94559) to request alternative formats.

2007 CALIFORNIA WATERSHED FORUM:
A Roundtable Discussion to Create a Statewide Watershed Program

SEPTEMBER 20, 2007
CalEPA Building
1001 I Street
Sacramento, CA

DRAFT AGENDA

8:00 Registration and Networking Breakfast
Join us early for coffee and pastries in the Byron Sher Auditorium. Watershed groups and other organizations are encouraged to display exhibits and share information. Please contact Kevin Ward (kcward@ucdavis.edu) if you are interested in displaying information. There is no charge with paid registration.

10:00 Welcome to the 2007 California Watershed Forum
Michael Wellborn California Watershed Network

10:15 A Vision for California Watersheds
Mike Chrisman California Secretary for Resources *(invited)*

10:30 Looking Back to Move Forward: Success Stories of the "12 Steps"
Sari Sommarstrom Sommarstrom and Associates
Laurel Ames California Watershed Network

10:45 Building a Statewide Watershed Program: This is no déjà vu!
Joe Grindstaff Director of California Bay-Delta Authority*(invited)*
Bridget Luther Director of Department of Conservation *(invited)*
Robert Meacher Plumas County Supervisor

12:00 Networking Lunch (Sandwiches, salads, and beverages to be provided)

1:15 State Agencies and Watershed Management: Where is the love?
Brian Leahy Department of Conservation *(invited)*
John Woodling Department of Water Resources *(invited)*
Tam Doduc State Water Resources Control Board *(invited)*

3:00 Networking Break

3:15 Present, Future, and Sustainable Funding for Watershed Management
Assemblyman John Laird Assembly Budget Committee *(invited)*
Assemblyman Jared Huffman Assembly Water, Parks, and Wildlife Committee *(invited)*

4:15 Forum Wrap-Up and Next Steps
Mary Lee Knecht California Watershed Network

Registration Form

2007 CALIFORNIA WATERSHED FORUM:
A Roundtable Discussion to Create a Statewide Watershed Program

SEPTEMBER 20, 2007
CalEPA Building
1001 I Street
Sacramento, CA

Name:	
Title:	
Agency/Organization:	
Address:	
Daytime Phone:	
E-mail:	

Registration Fee

		Please Check Box
Early Registration (by September 4)	$35	
Registration after September 4	$45	

Please mail this registration form with a check written to the "California Watershed Network." PayPal option is available at www.watershednetwork.org.

California Watershed Network
PO Box 188005
Sacramento, CA 95818

Updated information will be available at: www.watershednetwork.org. Please email info@watershednetwork.org or call 916.549.4017 with any questions.

2007 CALFED WATERSHED PROGRAM
NOTICE TO APPLICANTS
GRANT AWARD DECISION
AUGUST 6, 2007

Napa County
Jeff Sharp
Conservation, Development and Planning Dept
1195 Third Street, Suite 210
Napa, CA 94559

Dear Mr. Sharp,

Congratulations! We are delighted to tell you that your Valuation proposal: Watershed Assessment Framework:, for the amount of $394000.00, has been awarded a grant from the 2007 DWR/CALFED Watershed Grant Program. We are excited about your project and looking forward to working with you.

We will be working to assemble each grant agreement based upon the information and Scope of Work provided in Part 1 of your Full Proposal Excel spreadsheet. You will receive a copy of the draft agreement for edits and review. Once finalized, we will mail 3 hard copies to you to sign and return. We anticipate execution of the agreements beginning in September, 2007.

If you have any questions or want additional information, please contact us at dplah2o@water.ca.gov, or call Kristyne Miller at (916) 651-9621.

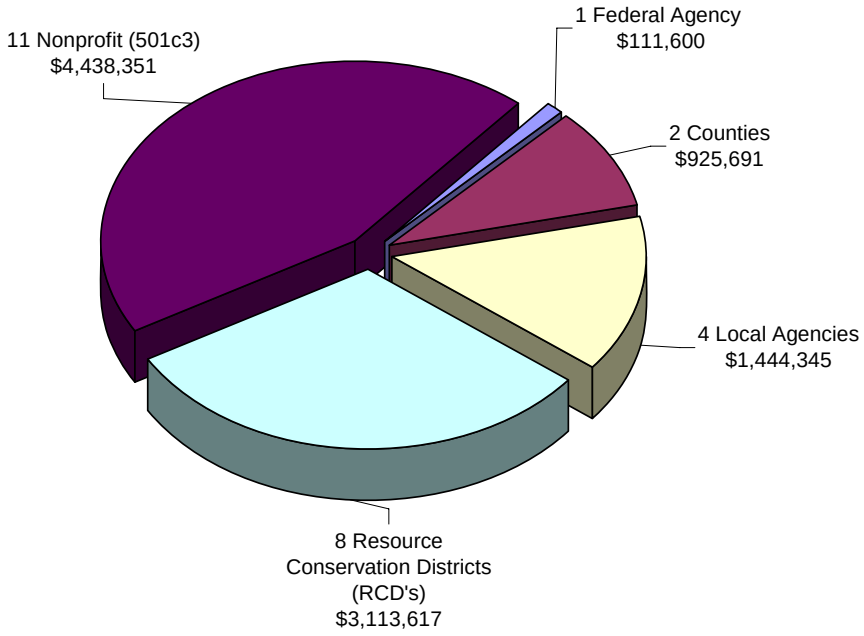
Sincerely,

Stefan Lorenzato
Watershed Program Manager

45
jsharp@co.napa.ca.us

DEPARTMENT OF WATER RESOURCES
CALFED WATERSHED PROGRAM
Proposition 50 2007 PSP

Grant Award by Organization Type



Federal Agency	**$111,600**
Inyo National Forest	$111,600
Resource Conservation Districts	**$3,113,617**
Alameda County Resource Conservation District	$296,500
El Dorado County Resource Conservation District	$50,000
San Joaquin County Resource Conservation District	$890,655
Sierra Resource Conservation District	$399,784
Solano Resource Conservation District	$349,963
Yolo County Resource Conservation District	$388,895
Fall River Resource Conservation District	$297,300
Butte County Resource Conservation District	$440,520
Local Agencies	**$1,444,345**
Madera County Resource Management Agency	$400,000
Marin County Department of Public Works	$168,210
Placer County Planning - Legacy Program	$339,645
Solano County Water Agency	$536,490

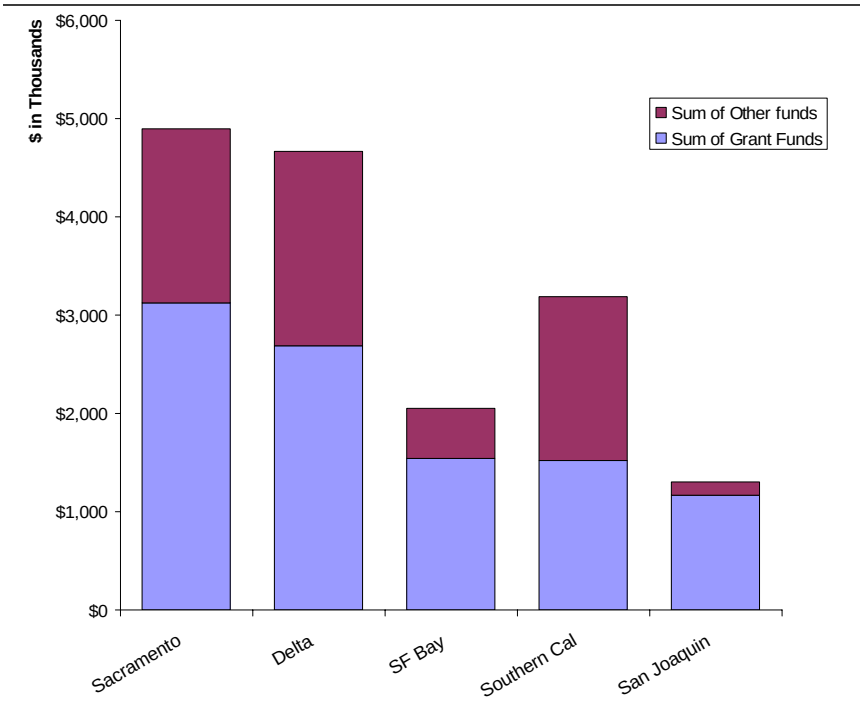
Counties	**$925,691**
Butte County	$531,691
Napa County	$394,000
Nonprofit (501c3) Organizations	**$4,438,351**
American Rivers	$124,604
Los Angeles & San Gabriel Rivers Watershed Council	$1,251,946
Public Education Enrichment Fund	$299,361
Sacramento River Watershed Program	$398,000
San Francisco Estuary Project	$400,000
Sierra Nevada Alliance	$363,800
Foundation for CSU San Bernardino, WRI	$264,500
Tuolumne River Preservation Trust	$256,140
Upper Putah Creek Stewardship	$400,000
Upper Sacramento River Exchange	$400,000
Urban Releaf	$280,000
GRAND TOTAL	**$10,033,604**

DEPARTMENT OF WATER RESOURCES
CALFED WATERSHED PROGRAM
Proposition 50 2007 PSP

Organizations by Region

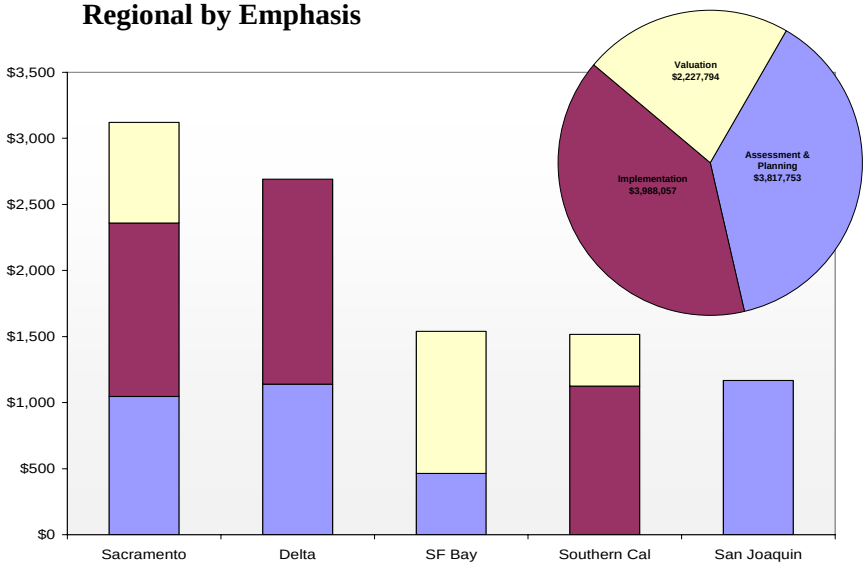
Sacramento	**$3,120,317**
Resource Conservation District	$50,000
Fall River Resource Conservation District	$297,300
Public Education Enrichment Fund	$299,361
Upper Sacramento River Exchange	$400,000
Butte County	$531,691
Resource Conservation District	$440,520
Planning - Legacy Program	$339,645
Sacramento River Watershed Program	$398,000
Sierra Nevada Alliance	$363,800
Delta	**$2,690,607**
Solano Resource Conservation District	$349,963
Upper Putah Creek Stewardship	$400,000
Resource Conservation District	$388,895
American Rivers	$124,604
Resource Conservation District	$890,655
Solano County Water Agency	$536,490
SF Bay	**$1,538,710**
Resource Conservation District	$296,500
Department of Public Works	$168,210
Napa County	$394,000
San Francisco Estuary Project	$400,000
Urban Releaf	$280,000
San Joaquin	**$1,167,524**
Inyo National Forest	$111,600
Resource Management Agency	$400,000
Sierra Resource Conservation District	$399,784
Tuolumne River Preservation Trust	$256,140
Southern California	**$1,516,446**
Los Angeles & San Gabriel Rivers Watershed Council	$859,952
The Foundation for CSU, San Bernardino Water Resources Institute (WRI)	$264,500
Los Angeles & San Gabriel Rivers Watershed Council	$391,994
Grand Total	**$10,033,604**

Regional Including Matching Funds



Region	Grant Funds	Match/Other Funds	Total Project
Sacramento	$ 3,120,317	$ 1,773,924	$ 4,894,241
Delta	$ 2,690,607	$ 1,977,039	$ 4,667,646
SF Bay	$ 1,538,710	$ 517,260	$ 2,055,970
San Joaquin	$ 1,167,524	$ 134,458	$ 1,301,982
Southern Cal	$ 1,516,446	$ 1,672,311	$ 3,188,757
Total Project	**$ 10,033,604**	**$ 6,074,992**	**$ 16,108,596**

Regional by Emphasis



CALFED Watershed Program 2007 Prop 50 Grant Awards

Name of Organization:	Project Title:	Total
Assessment & Planning		$3,817,753
Alameda County Resource Conservation District	*Alameda Creek Watershed Conservation Strategy*	$296,500
El Dorado County Resource Conservation District	*Watershed Education Summit*	$50,000
Fall River Resource Conservation District	*Fall River - Hat Creek - Burney Creek Watershed Plan*	$297,300
Inyo National Forest	*Upper San Joaquin / Inyo Watershed Assessment*	$111,600
Madera County Resource Management Agency	*Fresno River Watershed Assessment*	$400,000
Marin County Department of Public Works	*Marin County Watershed Management Plan*	$168,210
Public Education Enrichment Fund	*Bridging Schools and Communities in CABY River Watersheds*	$299,361
Sierra Resource Conservation District	*Upper San Joaquin / Sierra Watershed Assessment*	$399,784
Solano Resource Conservation District	*Creating a Laurel and Ledgewood Creek Åssessment and Watershed Plan*	$349,963
Tuolumne River Preservation Trust	*Clavey River Ecosystem Project*	$256,140
Upper Putah Creek Stewardship	*A Comprehensive Assessment of the Upper Putah Creek Watershed*	$400,000
Upper Sacramento River Exchange	*Upper Sacramento River Watershed Assessment and Management Strategy*	$400,000
Yolo County Resource Conservation District	*Cache Creek Geomorphic Assessment and Local Youth Monitoring in Capay Valley*	$388,895
Implementation		$3,998,057
American Rivers	*Marsh Creek Fish Passage*	$124,604
Butte County	*Watershed Modeling and Education Project*	$531,691
Butte County Resource Conservation District	*Butte Creek Watershed Plan Implementation*	$440,520
Los Angeles & San Gabriel Rivers Watershed Council	*Sun Valley Neighborhood Retrofit Demonstration*	$859,952
Placer County Planning - Legacy Program	*American Basin Watershed Restoration Project*	$339,645
San Joaquin County Resource Conservation District	*Continuing Education, Outreach, Restoration & Monitoring / Lower Mokelumne River Watershed*	$890,655
Solano County Water Agency	*Lower Putah Creek Winters Area Riparian Restoration Projects*	$536,490
The Foundation for CSU, San Bernardino Water Resources Institute	*Lytle Creek Watershed Assessment and Restoration Program*	$264,500
Valuation		$2,227,794
Los Angeles & San Gabriel Rivers Watershed Council	*Ecosystem Values of Watersheds in Southern California*	$391,994
Napa County	*Watershed Assessment Framework:*	$394,000
Sacramento River Watershed Program	*Sacramento River Watershed Health Indicator Report (WHIR)*	$398,000
San Francisco Estuary Project	*Application of the Watershed Assessment Framework as a Tool for Integrating and Communicating Watershed Health Indicators for the San Francisco Estuary*	$400,000
Sierra Nevada Alliance	*Valuing Watersheds: process and perception in CALFED waters.*	$363,800
Urban Releaf	*Ettie Street Watershed Evaluation*	$280,000
Grand Total		**$10,033,604**

DEPARTMENT OF WATER RESOURCES
CALFED WATERSHED PROGRAM
Proposition 50 2007 PSP

GRANT SUMMARY

GRANT SOURCE: Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002, Water Code Section 79500 *et seq.*, Proposition 50

TOTAL AVAILABLE: Approximately $10.0 Million

AGREEMENT TERM: Winter 2007 - June 2010

TABLE 1 AWARD AMOUNTS

	Eligible Applicants	Maximum Award	Minimum Award	Local Match Requirements
New Assessments, Planning and Valuation Proposals	Eligible applicants include local, state, and federal agencies, special districts, state colleges and universities as well as California non-profit organizations with IRS §501(c)(3) status.	$400,000	$50,000	Recommended, not required
Implementing projects in an existing Watershed Plan	The applicant must be a partnership between an agency and a locally-based, watershed group or non-profit organization.	$1,000,000	$100,000	50/50 Match[1]

2007 CALFED WATERSHED PROGRAM PROPOSAL SOLICITATION TIMELINE

30-Day Public Review	Public review and comment period closed	30 days	January 5, 2007
Release of PSP	RFP - Web-based application for Concept Proposals – Complete packet released to public for proposal submittals		February 13, 2007
Concept Proposals Due Date	5-week application period. Concept Proposal Phase: February 1, 2007 – March 16, 2007	5 Weeks	March 16, 2007
Full Proposal Requests	Concept Proposal Applicants anticipated to be invited back for full proposals		April 30, 2007
Full Proposal Due Date	5-week application period. Full proposals and all supporting documents due. Full Proposal Phase: April 30, 2007 – June 1, 2007	5 Weeks	June 1, 2007
Final Award Decision	Announcement of final list of award grantees		September 1, 2007
Grant Agreements	Administer grant agreements & funds		Winter 2007

CALFED Watershed Program
2007 PSP – Phase 1: Concept Proposals

Concepts Received:	95	37.4
Concepts Advanced to Phase 2:	46	17.8
Assessment & Planning:	*24*	*8.2*
Implementation:	*13*	*6.8*
Valuation:	*9*	*2.8*
Concepts not Advanced:	49	19.6
Assessment & Planning:	*17*	*6.1*
Implementation:	*24*	*11.7*
Valuation:	*8*	*1.8*

CALFED Watershed Program
2007 PSP – Phase 2: Full Proposals

Full Proposals Received:	44	17.3
Assessment & Planning:	*22*	*7.4*
Implementation:	*13*	*6.9*
Valuation:	*9*	*3.0*
Recommended for Award:	27	10.0
Assessment & Planning:	*13*	*3.8*
Implementation:	*8*	*4.0*
Valuation:	*6*	*2.2*

CalFed Watershed Program Grant – Summary

Watershed Assessment Framework:

North-Bay and Delta Scoping and Napa River Pilot Project

The proposed "Watershed Assessment Framework: North-Bay and Delta Scoping and Napa River Pilot Project" is a coordinated effort to develop performance measures and indicators for "watershed health." It will apply a watershed assessment framework (WAF), which is a means of evaluating/reporting on ecosystem services and socio-economic benefits/conditions, in the Napa River watershed and across the Bay-Delta region. The Napa River watershed will serve as a pilot and will be the focus of the data analysis phase of the project. The information learned through this pilot application will provide Napa County a set of key watershed indicators and a framework by which to gauge and report the effectiveness of local restoration and watershed enhancement activities intend to improve water quality and meet state and local watershed goals (i.e., TMDL implementation and reporting requirements). Outcomes learned from the Napa River pilot application can also then be used to inform a broader application of the WAF throughout the North Bay-Delta region.

Partners on the project include: The University of California, Davis; Napa County Resource Conservation District; Sonoma Ecology Center; U.S. Geological Survey; and the Calaveras County Water District (representing stakeholders in the Delta Mokelumne and Calaveras watersheds). The project will provide important information to stakeholders about appropriate ways to measure watershed conditions and the effectiveness of actions taken to improve water quality and meet local and regional watershed goals and objectives. (Project work tasks and budget outline is attached.)

The project will be coordinated with a statewide effort involving other related projects in the region and across California. Based on a science-based process to develop a local and regional watershed indicator database, stakeholders from existing forums will be invited to join regional technical advisory committees and public forums to discuss the selected monitoring indicators. The Watershed Information Center and Conservancy (WICC) Board, the WICC's Technical Advisory Committee, the North Bay Watershed Network, as well as other targeted public forums will be used to gain stakeholder input into indicator selection and use. Although focus for the pilot application will be in the Napa River watershed, limited set of critical regional indicators will be developed. The proposed indicators will be reviewed by experts, including the CalFed Science Program prior to analysis, to addressed questions such as: 1) is there an appropriate suite of watershed parameters and associated indicators? 2) Are selected watershed indicators linked to important ecosystem processes and beneficial uses? 3) How does one make/measure connections between management actions and watershed effects?

A critical aspect of the project is providing a science-based, yet understandable, depiction of conditions, influences, and changes in the Napa River watershed. For this reason, the project will develop a reporting device for the Napa River that will overtime 1) analyze conditions in the watershed relative to standards, references, and goals, 2) record change in condition over time, and 3)

track differences among tributaries. In the long run, project reporting will inform local and regional adaptive management to systematically improve management policies and practices by learning from recorded outcomes. The pilot effort will also improve future development of watershed and ecosystem indicators by CALFED, the Department of Water Resources, and other state and local agencies tasked to improve watershed monitoring and other watershed management programs.

Obtaining adequate funding through grants and other means in support of WICC's charge and mission is priority action item identified in the WICC's Strategic Plan. Work in preparing this grant application and upfront coordination of partnerships described in the grant is currently funded though under WICC program.

Project Work Task		Task Description	Match & In-Kind Funds	Grant Funds Requested	Project Total
Task 1:	Develop basis for assessing watershed conditions	Develop knowledge base of possible analytical approaches, potentially available data, and reporting strategies to community and TAC	$22,000	$49,000	$71,000
Task 2:	Local and regional coordination	Convene and meet with stakeholders advisory committees, communicate and receive feedback on approach and indicator selection	$12,400	$37,400	$49,800
Task 3:	Develop indicator analysis and reporting plan	Develop regional indicator framework and plan for analysis in focus watershed	$13,000	$41,500	$54,500
Task 4:	WAF indicator analysis in focus watershed	Analyze indicators corresponding to the 7 WAF attributes, describe process, findings, and interpretation	$22,000	$183,000	$205,000
Task 5:	Report findings for watershed and WAF testing	Report regional framework of indicators, report analysis of WAF indicators for Napa River watershed, description of stakeholder and scientific analysis process, and reporting of lessons learned, gaps, next steps, etc.	$7,000	$49,600	$56,600
Reporting:				$22,500	$22,500
Invoicing:				$11,000	$11,000
TOTAL PROPOSED BUDGET:			$76,400	**$394,000**	$470,400

American Canyon Middle School serves the students of the city of American Canyon, the southernmost city in Napa county. The school is located on the Western edge of American Canyon borders the wetlands and flood plain of the Northern San Francisco Bay.

American Canyon Middle School opened in the winter of 1998 with approximately 150 sixth grade students. The following fall, American Canyon's population increased to approximately 300 sixth grade and seventh grade students. Currently, American Canyon Middle School serves a student body consisting of 750 sixth, seventh and eighth grade students.

The diverse student body at ACMS consists of approximately 48% Caucasian students, 19% Hispanic, 12% Filipino, 11% African American, 3% Asian, 3% Pacific Islander, and 1% American Indian/Alaskan students. Limited English Proficient students account for 8.7% of the enrollment.

Students are assigned to grade level "Dens." Within each Den are five regular classrooms, a complete science lab, an exploratory lab, faculty office and workroom.

ACMS offers a state of the art facility with the highest levels of instructional technology. Students have access to a fully integrated internal computer network including access to the Internet through a T1 line. Students also have full digital video production capability.

The instructional program at ACMS offers solid instruction in the areas of language arts, mathematics, social studies, science, physical education, technology, and performing arts. American Canyon's pedagogical style is project based. Students will complete an interdisciplinary project each trimester. The specific concepts outlined by the California State Curriculum Frameworks for each subject area are embedded within the projects. Assessments are based on district writing and math assessments and the Standardized Testing and Reporting ("STAR") Program mandated by the California Board of Education for all students, grades 2-11.

STATE WATER BOARD

BOARD MEETING

Tuesday, September 4, 2007–10:00 a.m.

Coastal Hearing Room – Second Floor
Joe Serna Jr./Cal/EPA Building
1001 I Street, Sacramento

DECLARATION OF A QUORUM

Tam M. Doduc, Chair; Gary Wolff, P.E., Ph.D, Vice Chair; Arthur G. Baggett, Jr., Member; Charlie Hoppin, Member; Frances Spivy-Weber, Member

BOARD MEETING

Public comments on agenda items will be limited to 5 minutes or otherwise at the discretion of the Board Chair

PUBLIC FORUM

Any member of the public may address and ask questions of the Board relating to any matter within the State Water Board's jurisdiction provided the matter is not on the agenda, or pending before the State Water Resources Control Board or any California Regional Water Quality Control Board.

BOARD BUSINESS

1. The Board will consider adoption of the July 17, 2007 Board meeting minutes.

2. Board Member Report.

UNCONTESTED ITEMS (Items 3 - 8)*

*****3. Consideration of a resolution authorizing the Executive Director or designee to apply for, accept, and/or amend a grant from U.S. EPA under **Clean Water Act section 106**.

*4. Consideration of a resolution authorizing the Executive Director or designee to apply for, accept, and/or amend a grant from U.S. EPA under **Clean Water Act section 205(j)**.

*5. Consideration of a resolution committing Clean Beaches Initiative (CBI) Grant funds to **Carpinteria Sanitary District** for the South Coast Beach Communities Septic to Sewer Project; Rincon Beach; CBI Grant Project No. 601.

*6. Consideration of the State Fiscal Year (SFY) **2007/08 State Revolving Fund (SRF)** Loan Program Priority List.

*7. Consideration of the **Small Community Wastewater Grant (SCWG)** Program Statewide Competitive Project List (Statewide List).

*8. Consideration of the **Petition of City of Santa Cruz** for review of Administrative Civil Liability Order No. R3-2005-0067 issued by the Central Coast Regional Water Quality Control Board. (SWRCB/OCC File No. A-1712). The State Water Board will consider issuing an order remanding the matter back to the Regional Water Board for further consideration in light of a Settlement Agreement. (Written comments were due on August 27, 2007 by 5:00 p.m.)

WATER QUALITY

9. Consideration of a Resolution approving an amendment to the Water Quality Control Plan for the San Francisco Bay Region to establish a Total Maximum Daily Load (TMDL) and implementation plan for pathogens in the **Napa River Watershed**. (Written comments were due on August 3, 2007 by 12:00 p.m.)

10. Consideration of a Resolution approving an amendment to the Water Quality Control Plan for the San Francisco Bay Region to establish a Total Maximum Daily Load (TMDL) and implementation plan for pathogens in the **Sonoma Creek Watershed**.

IMPORTANT INFORMATION!!

Unless otherwise specified, submittal of written comments must be received by 12:00 p.m., August 23, 2007, **and will not be accepted after that time.**

Submittal of **electronic Powerpoint presentations** must be received by 5:00 p.m., August 30, 2007, **and will not be accepted after that time.**

Submittals are to be sent via e-mail to the Clerk to the Board at commentletters@waterboards.ca.gov. Please indicate in the subject line, "**9/4/07 BOARD MEETING (fill in bolded subject from appropriate item).**" If you have questions about the agenda, contact the Clerk to the Board at (916) 341-5600.

Agenda and items will be available electronically at: http://www.waterboards.ca.gov/wksmtgs/2007/schedule.html.

* Items on the uncontested items calendar may be removed at the request of any Board member or person. If an item is removed from the uncontested items calendar, it will only be voted on at this meeting if the Board accepts the staff recommendation for the agenda item. Otherwise, the item will be continued to a subsequent board meeting to allow input by interested persons.

Video broadcast of meetings will be available at: http://www.calepa.ca.gov/Broadcast/.

STATE WATER RESOURCES CONTROL BOARD
BOARD MEETING SESSION – DIVISION OF WATER QUALITY
SEPTEMBER 4, 2007

ITEM 9

SUBJECT

CONSIDERATION OF A RESOLUTION APPROVING AN AMENDMENT TO THE WATER QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY REGION (BASIN PLAN) TO ESTABLISH A TOTAL MAXIMUM DAILY LOAD (TMDL) AND IMPLEMENTATION PLAN FOR PATHOGENS IN THE NAPA RIVER WATERSHED

DISCUSSION

The San Francisco Bay Regional Water Quality Control Board (San Francisco Bay Water Board) adopted a proposed amendment to the Basin Plan to establish a TMDL to address pathogens in the Napa River Watershed. The TMDL defines allowable density-based bacteria concentrations and prohibits discharge of raw or inadequately treated human waste in the Napa River Watershed. San Francisco Bay Water Board determined that the zero human waste discharge target is necessary because raw or inadequately treated human waste is a significant source of pathogenic organisms (including viruses); and attainment of fecal coliform targets alone may not be sufficient to protect human health. The staff report presents results of staff analysis of pathogen impairment and sources, recommended pathogen load allocations, and a plan to implement the allocations. If approved, the Basin Plan amendment will: (1) establish a pathogen TMDL in the Napa River Watershed pursuant to section 303(d) of the Clean Water Act, and (2) establish an implementation strategy to achieve and support the TMDL. Approval of this item will revise Basin Plan Chapter 4 (implementation plan).

The San Francisco Bay Water Board has established water quality standards for the Napa River and its tributaries. The water quality standards consist of: (a) beneficial uses for the water body, (b) water quality objectives to protect those beneficial uses, and (c) the Antidegradation Policy, which requires the continued maintenance of existing high-quality waters. Currently, the Napa River is listed on the Clean Water Act 303(d) list because it does not meet standards due to elevated concentrations of pathogens, as well as sediment and nutrients. The primary beneficial uses of the Napa River and its tributaries impaired by high levels of pathogens are water contact recreation (REC1) and non-contact water recreation (REC2). The purpose of this TMDL is to protect and restore these beneficial uses by reducing the levels of pathogens in this watershed. This plan builds upon previous, and ongoing, successful efforts to reduce pathogen loads in the Napa River and its tributaries, and requires actions consistent with the California Water Code (CWC) section 13000 et seq.; the state's Nonpoint Source Pollution Control Program Plan (CWC Section 13369) and its Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program; and the human waste discharge prohibition (Basin Plan Discharge Prohibition 15).

PROBLEM STATEMENT

Waterborne pathogens pose a risk to human health. In ambient waters, the presence of human and animal fecal waste and associated pathogens leads to high concentrations of fecal coliform and *E. coli* bacteria. Bacteria levels in the Napa River and its tributaries are higher than the bacteria water quality objectives established to protect people who swim, wade, and fish in these waters. Consequently, humans who recreate in the Napa River and its tributaries are at risk of contracting waterborne diseases.

The overall intent of this implementation plan is to restore and protect beneficial uses of the Napa River and its tributaries by reducing pathogen loadings. Potential pathogen sources in the watershed include: septic systems, sanitary sewer line failure, municipal runoff, municipal wastewater treatment facilities, livestock, and wildlife. The San Francisco Bay Water Board recognizes the technical, institutional, and monetary challenges that each source category may face in designing and implementing measures to reduce its respective loading. It is anticipated that enforcement mechanisms will only be needed where individuals have chosen not to assess and reduce their potential to affect water quality.

The Napa River Watershed Pathogen TMDL uses fecal coliforms, *E. coli*, and fecal enterococci as pathogen indicators. Use of these indicators is consistent with San Francisco Bay Water Board water quality objectives and with federal guidance (U.S. Environmental Protection Agency [U.S. EPA], 2002). If, in the future, better indicator organisms are identified and new objectives are put into place for these organisms, this TMDL will be re-evaluated and modified if appropriate.

In order to develop a TMDL, a desired or target condition must be established to provide measurable environmental management goals and a clear linkage to attaining the applicable water quality objectives. The numeric targets (desired future conditions for the Napa River Watershed) proposed for this TMDL are as follows:

- Geometric mean *E. coli* density less than 126 CFU/100 mL
- 90th percentile *E. coli* density less than 409 CFU/100 mL
- Geometric mean fecal coliform density less than 200 CFU/100 mL
- 90th percentile fecal coliform density less than 400 CFU/100 mL
- Median total coliform density less than 240 CFU/100 mL
- No single total coliform sample to exceed 10,000 CFU/100 mL
- Zero discharge of untreated or inadequately treated human waste to the Napa River and its tributaries

The bacterial density targets are based on U.S. EPA's *E. coli* recommended criteria and on the Basin Plan's contact recreation water quality objectives for fecal coliform and total coliform bacteria. It should be noted, however, that the State Water Resources Control Board (State Water Board) is in the process of developing statewide bacterial water quality objectives based on U.S. EPA guidance. Should the State Water Board adopt new objectives, the existing fecal and total coliform water quality objectives currently in the Basin Plan will likely be replaced. The fecal coliform and total coliform targets and allocations will need to be revisited, and perhaps

vacated, and will no longer be effective upon the replacement of the total and fecal coliform water quality objectives in the Basin Plan.

The last target, zero discharge of untreated human waste, is based on the knowledge that fecal bacteria are imperfect indicators of human pathogens. Since direct monitoring of human pathogens is not feasible, and since human waste is the most serious source of these pathogens, a target to implement the prohibition of raw or inadequately treated human waste discharge is proposed. This target is consistent with the Basin Plan's region-wide prohibition against the discharge of raw or inadequately treated sewage.

IMPLEMENTATION PLAN

This plan builds upon previous and ongoing successful efforts to reduce pathogen loads in the Napa River and its tributaries.

The TMDL gives Napa County until January 2008 to submit a plan and implementation schedule for evaluating On-Site Sewage Disposal Systems (OSDS) performance, and for correcting deficiencies in OSDSs identified as potentially discharging to surface waters. Priority will be given to Browns Valley Creek, Murphy Creek, and Salvador Channel subwatersheds. The septic system owners will be responsible for compliance with applicable Napa County, San Francisco Bay Water Board, and State Water Board requirements. Beginning January 2011 and bi-annually thereafter, Napa County will be required to provide documentation of progress that has been made toward implementing control measures.

It will be the responsibility of the Napa Sanitation District, the City of Calistoga, the City of St. Helena, the City of American Canyon, the Yountville Joint Treatment Plant, and the Napa River Reclamation District #2109 to apply for coverage under the State Water Board's general waste discharge requirements for sanitary sewer systems (Order No. 2006-0003-DWQ) and to comply with the provisions of the waste discharge requirements. In addition to applying for coverage under the general waste discharge requirements, each municipal wastewater discharger will be required to comply with its applicable National Pollutant Discharge Elimination System (NPDES) permit. Each of the responsible parties will be required to report progress of its inspections and evaluations of the sanitary sewer systems annually.

The state's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program requires that current and proposed nonpoint source discharges be regulated under waste discharge requirements, waivers of waste discharge requirements, Basin Plan prohibitions, or some combination of these tools. For grazing lands and confined animal facilities, ranchers, both landowners and lessees, and the confined animal facilities owners and operators must submit a Report of Waste Discharge to the San Francisco Bay Water Board by January 2010 that provides the following: a description of the facility, identification of necessary site-specific management measures to reduce animal waste runoff, and an implementation schedule for identified management measures. In addition, ranchers and the confined animal facilities operators will be required to comply with the applicable waste discharge requirements, waiver conditions, or prohibitions, and to report progress on implementation of management measures that reduce animal waste runoff. Completion and/or compliance dates will be determined and specified in the applicable waste discharge requirements or waiver conditions. However, the San Francisco Bay Water Board staff intends to work with stakeholders to develop conditions for a general waiver of waste discharge requirements for grazing lands by 2009.

The City of Napa, Napa County, Town of Yountville, City of St. Helena, City of Calistoga, and the City of American Canyon will be required to comply with approved storm water management plans. In addition to being compliant with the storm water management plans, these entities will need to update/amend the plans, as needed, to include specific measures designed to reduce the discharge of human and animal wastes. The approved storm water management plans and applicable NPDES permits will specify the dates for completion and/or compliance.

The numeric targets and load allocations in the TMDL are not directly enforceable. To demonstrate attainment of applicable allocations, responsible parties must demonstrate that they are in compliance with specified implementation measures and any applicable waste discharge requirements or waiver conditions.

The TMDL encourages, but does not require, watershed groups and stakeholder partnerships to coordinate, with the ultimate goal of achieving water quality targets. In many cases, watershed groups may assist and participate in actions to facilitate successful implementation of this TMDL, including developing appropriate management practices, conducting group or watershed-based monitoring, sharing technical knowledge, and obtaining funding. Watershed groups can assist individual dischargers in achieving compliance. However, as required by the state's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program, individual dischargers continue to bear the ultimate responsibility for complying with water quality requirements and orders.

Approximately every five years, the San Francisco Bay Water Board will review the Napa River Watershed Pathogen TMDL and evaluate new and relevant information from monitoring, special studies, and the scientific literature. If source control actions are fully implemented throughout the watershed and the TMDL targets are not met, the San Francisco Bay Water Board may consider whether the TMDL targets are attainable and re-evaluate or revise the TMDL and allocations as appropriate. Alternatively, if the required actions are not implemented or are only partially implemented, the San Francisco Bay Water Board may consider further regulatory or enforcement action against dischargers not in compliance.

COST ESTIMATE: AGRICULTURAL WATER QUALITY CONTROL PROGRAM

Cost estimates were projected for a ten-year planning horizon. The average annual program implementation cost to agricultural dischargers is estimated to range between $60,000 and $250,000 for the next ten years. These costs will be shared by Napa River Watershed grazing lands operators (approximately 20 operators). This estimate includes the cost of implementing animal waste controls and grazing management measures and is based on costs associated with technical assistance and evaluation, installation of water troughs, and livestock control fencing along up to 25 percent of streams in grazing lands. Besides fencing, other acceptable methods of managing livestock access to streams are not included in this cost estimate due to variability in costs and site-specific applicability. In addition to private funding, potential sources of financing include federal and state water quality grants and federal agricultural grants.

POLICY ISSUE

Should the State Water Board approve the amendment to the Basin Plan to establish a TMDL and implementation plan for pathogens in the Napa River Watershed, as adopted under San Francisco Bay Water Board Resolution No. R2-2006-0079?

FISCAL IMPACT

San Francisco Bay Water Board and State Water Board staff work associated with or resulting from this action will be addressed with existing and future budgeted resources.

REGIONAL WATER BOARD IMPACT

Yes, approval of this resolution will affect the San Francisco Bay Water Board by amending the Basin Plan.

STAFF RECOMMENDATION

That the State Water Board:

1. Approves the amendment to the Basin Plan as adopted under San Francisco Bay Water Board Resolution No. R2-2006-0079.

2. Authorizes the Executive Director or designee to submit the amendment adopted under San Francisco Bay Water Board Resolution No. R2-2006-0079 to the Office of Administrative Law for approval of the regulatory provisions and to the United States Environmental Protection Agency for approval of the TMDL.

Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
FAX (916) 341-5463 • http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

NOTICE OF PUBLIC WORKSHOP

STATE WATER RESOURCES CONTROL BOARD / CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD JOINT WORKSHOP REGARDING THE CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD'S IRRIGATED LANDS PROGRAM

September 13, 2007 - 1 p.m.
City of Clovis Council Chambers
1033 Fifth Street
Clovis, California 93612

NOTICE IS HEREBY GIVEN that the State Water Resources Control Board (State Water Board) and the Central Valley Regional Water Quality Control Board (Central Valley Water Board) will hold a joint public workshop regarding the Central Valley Water Board's Irrigated Lands Program. This workshop will give interested members of the agricultural community, agencies involved with agriculture, and the public an opportunity to hear Central Valley Water Board staff provide an update on the implementation of the Irrigated Lands Program and provide comments and recommendations to the State/Central Valley Water Boards. The workshop will be held at the time and place noted above. Interested parties are invited to provide comments and recommendations concerning the Irrigated Lands Program.

Subsequent to this public workshop, the State Water Board and Central Valley Water Board will consider whether further action regarding the Irrigated Lands Program is necessary.

A quorum of State Water Board and Central Valley Water Board members may be present at the workshop. No action will be taken by the State Water Board or the Central Valley Water Board at the workshop.

BACKGROUND

Senate Bill 390 (SB 390)[1], signed into law on October 6, 1999, required Regional Water Quality Control Boards (Regional Water Boards) to review their existing waivers of waste discharge requirements (WDRs) and to either renew them or replace them with general or individual WDRs. Under SB 390, waivers that were not reissued automatically expired on January 1, 2003. To comply with the requirements of SB 390, the Regional Water Boards adopted conditional waivers for various discharge categories. Some of those waivers covered discharges from agricultural lands, which include irrigation return flow, flows from tile drains, and storm water runoff. These discharges can affect water quality by transporting pollutants

[1] Senate Bill 390 **(**CHAPTER 686 Statutes of 1999) An act to amend Sections 13269 and 13350 of the Water Code, relating to water. [Approved by Governor October 6, 1999. Filed with Secretary of State October 10, 1999 and subsequent amendments.]

including pesticides, sediment, nutrients, salts, pathogens, and heavy metals from cultivated fields into surface waters. Groundwater can also be affected by pesticides, nitrate, and salt.

To address water quality impairments caused by discharges from irrigated agricultural lands, the Central Valley Water Board adopted Conditional Waivers in 2003. The 2003 Conditional Waivers were later extended until June 2006. On June 22, 2006, the Central Valley Water Board adopted the 2006 Conditional Waivers. These waivers have been and continue to be a matter of great interest to the State Water Board and other parties.

In July 2006, several environmental and agricultural interest groups filed petitions with the State Water Board challenging the Central Valley Water Board action of adopting the 2006 Conditional Waivers on various grounds. On May 17, 2007, the State Water Board dismissed the petitions. Nevertheless, the State Water Board has concerns about the rate of progress the Central Valley Water Board Irrigated Lands Program is making to address water quality impairments and has elected to hold a joint workshop to gather information and evaluate the current status of the program.

Central Valley Water Board staff will address the following issues at the workshop. The State and Central Valley Water Boards are also seeking public comments on these issues.

Monitoring and Reporting Program (MRP)

- What revisions does staff recommend making to the MRP?
- What questions does the Central Valley Water Board believe will be answered by the revised MRP?
- Does the Central Valley Water Board intend that the revised MRP will require compliance with Surface Water Ambient Monitoring Program (SWAMP) standards?
- What actions do Central Valley Water Board staff recommend to ensure that the revised MRP will be fully implemented by the coalitions?

Discharger Participation

- Is current participation by growers in the Irrigated Lands Program at satisfactory levels?
- What actions do Central Valley Water Board staff plan to take to increase levels of participation?

Water Quality/Management Plans

- What data does the Central Valley Water Board have on exceedances of water quality objectives in surface water bodies within the Central Valley that receive agricultural discharges? Is the data reliable and of good quality?
- What data does the Central Valley Water Board have on exceedances of water quality objectives in groundwater within the Central Valley that receive agricultural discharges? Is the data reliable and of good quality?
- What actions do the Central Valley Water Board staff and the coalitions plan to take to address any violations of water quality objectives that are found?
- Will Central Valley Water Board staff recommend requiring the preparation and implementation of more management plans in response to violations that are found?
- Do Central Valley Water Board staff expect that the use of such management plans will fully address the elements of the State Water Board's nonpoint source policy?

Coalition Compliance with Waiver Conditions

- How will the Central Valley Water Board track failure to comply with waiver conditions?
- Does the Central Valley Water Board plan to issue notices of violations when a waiver condition, such as a failure to submit a report, is not met?
- Do Central Valley Water Board staff intend to recommend decertification of coalitions that engage in a continuing series of violations?

Coordination with Other Agencies

- What is the Central Valley Water Board currently doing to coordinate with other agencies involved with agriculture, including the Department of Pesticide Regulation, Department of Food and Agriculture, County Agricultural Commissioners, Resource Conservation Districts, and the U.C. Extension Farm Advisors?
- What does the Central Valley Water Board plan to do to coordinate with these agencies in the future?

Long Term Program

- What is the current status of the Central Valley Water Board's plan to develop a long term program to address agricultural discharges, including threats posed to groundwater?
- What is the schedule for adopting the final program?

SUBMISSION OF COMMENTS

Written comments are welcome and encouraged and will be available for Board Member discussion at the workshop only if received by **12 p.m. on September 4, 2007**. Oral presentation should summarize written comments. Time limitations on presentation may be imposed. Please coordinate oral presentations with others with similar comments. For other presentation recommendations, see "Presentations to the Board" at http://www.waterboards.ca.gov/board.html. Written comments are to be addressed and submitted to:

Ryan Maughan
Division of Water Quality
State Water Resources Control Board
1001 I Street, 15th Floor
Sacramento, CA 95814
Fax: (916) 341-5584
E-mail comments should be sent to rmaughan@waterboards.ca.gov.

Please also indicate in the subject line, **"Comment Letter – September 13, 2007 Irrigated Lands Program Joint Workshop."**

Please direct questions about this notice to Johnny Gonzales, Division of Water Quality, at (916) 341-5510 (jgonzales@waterboards.ca.gov) or Senior Staff Counsel Ted Cobb at (916) 341-5171 (tcobb@waterboards.ca.gov).

PARKING AND ACCESSIBILITY

There is parking available in lots behind and near City Hall, and there are metered parking spaces in the vicinity of the building. The facility is accessible to persons with disabilities. Individuals who require special accommodations are requested to contact Adrian Perez, at (916) 341-5880, at least five working days prior to the public hearing date. Persons with hearing or speech impairments can contact us by using the California Relay Service TDD. TDD (Telecommunications Device for the Deaf) is reachable only from phones equipped with a TDD Device. HEARING IMPAIRED RELAY SERVICE: TDD to voice1-800-735-2929, Voice to TDD 1-800-735-2922.

August 8, 2007
Date

Jeanine Townsend
Acting Clerk to the Board

watershed information center & conservancy of napa county WICC

Watershed Information Center
& Conservancy of Napa County
1195 Third Street, Suite 210
Napa, California 94559

www.napawatersheds.org
(707) 253-4417
mailto: info@napawatersheds.org

Item 7a

To: Members of the Watershed Information Center and Conservancy (WICC) Board

From: General Plan Update Comment Subcommittee
Kate Dargan and Marc Pandone

Date: August 16, 2007

Re: Revision of Proposed Comments on General Plan Update (GPU)

On May 24, 2007, the WICC Board approved the formation of a subcommittee to review the Draft General Plan Update and propose comments to be submitted by Chair to the Planning Director. During the WICC Board's June 28, 2007 meeting the subcommittee shared its draft comment responses with the full WICC Board. At that time the WICC Board requested that the committee's comments be discussed in more detail at the WICC's July 26th meeting, at such time the Board would have more time to review and consider the draft comments. At its July meeting, the Board discussed the committee's comments in more depth and requested some revisions to be conducted by the committee with input from others on the Board.

The following are the revised comments for the WICC Board's consideration. The intent of the comments below are to address matters relating to the goals and policies in the General Plan Update which directly govern water availability, water quality and water use; as well as those which may indirectly affect hydrology issues in Napa County watersheds, agricultural lands, and urban areas.

Overall

The background descriptions, vision and overall goals of the General Plan Update (GPU) reflect a strong desire to discourage conversion of agricultural lands to other uses and to protect and preserve an adequate and safe water supply in support of a healthy environment and vibrant economy. There are some areas, however, which require a more comprehensive treatment.

Although very comprehensive, the GPU (and related supporting documents) does not fully utilize various watershed assessment and land use planning documents to their fullest potential. The WICC Board was tasked with reviewing many "watershed related" topics evaluated in the County's Baseline Data Report (BDR). The GPU and those policies related to the assessment and management of the County's watershed lands would benefit

from a thorough and effective alignment with studies and recommendations outlined in the BDR. Examples of this include:

- Linking of overlying principles and policies in the GPU to directly reference and make use of the underlying issues and recommendations identified in the BDR related to future assessment and management of the County's natural resources.

- Recognizing and linking mid-level planning needs to bridge between project-specific plans and the more general watershed resource policies provided in the GPU. Examples of these mid-level linkages include ties to the development and implementation of an Open Space Plan, Watershed Management Plan, Hazard Mitigation Plan, Fire Management Plan or Resource Management Plans for each of the Resource Topic Areas that makeup the BDR. These mid-level plans are intended to bridge between broad General Plan goals and policies and project-specific plans that address multiple resource concerns related to a specific parcel or project. The General Plan is the umbrella document under which all other resource management plans are tiered and should specifically reference and support the future development and implementation of resource specific or project level based plans.

The WICC Board's Strategic Plan identifies a number of priority action items intended to inform management of the County's watersheds (attached). A priority action item acknowledged in the WICC's Plan is the development of a comprehensive Watershed Management Plan. The Napa County GPU should afford specific policies or action items that promote the development a Watershed Management Plan that supports habitat restoration, environmental monitoring, development of predictive hydrological data/models and protective performance measures that address identified water quantity and quality concerns and opportunities. The GPU should further support the dissemination of informative watershed information and data to facilitate informed and adaptive land use decisions by landowners, land managers and policymakers.

Agriculture and Land Use

Conversion of Timberland: Conversion of timberland resources to viticulture use is identified in the EIR as having no net effect on agriculture and makes no clear distinction between timber production and other agricultural uses. It should be noted that timberlands provide significant services that should be recognized in the General Plan.

Timberland/Forested landscapes offer the following:

- soil retention and renewal capacities
- protection and buffering of water yield
- protection of quantity quality
- reduction of water sedimentation potential
- potential for fire ecological regimes
- aquatic and terrestrial wildlife habitat
- plant habitat
- visual/aesthetic values and buffers, and
- carbon/green house gas production sequestering value

Polices regarding timber conversion should be developed and evaluated in regards to supporting sustainable forestry as a complementary land use for Napa County, presenting timberland and forest management as an equally valuable way of maintaining ecological balance, biodiversity, forest health, quality viewsheds, and a way to economically support diverse rural land uses.

Where possible, the GPU should be revised to more clearly support timber/biomass production as a land use, discourage the amount of permanent timber conversions to other uses, and clarify the dissimilarity between forestry and viticulture in terms of environmental impacts and benefits.

The GPU should include forestry as a desired agricultural practice. It should further clarify the definition of agriculture to include forestry and address the different environmental impacts various agricultural practices may have (irrigated crop, orchard, timber, grazing). Recognizing all agricultural impacts as being similar is like saying all housing impacts are the same, regardless of density or design. Where appropriate, permanent timberland conversion to other uses should be addressed as undesirable in forested cover areas, and conversion on sloped hillsides, should be discouraged due to changes in watershed and environmental values.

Social Equity/Environmental Justice: On Page 31, under "Issues Facing the County", the GPU stresses the importance of Social Equity issues and declares a desire to ensure that "all groups are treated fairly and equally without regard to race, income, or other factors." This implies that we all have rights, and also that we all have responsibilities – in regards to promoting a sustainable community and environment. Acknowledgement of the value and/or necessity of landscape-level planning with regards to watershed management and restoration practice would be helpful in presenting a balanced emphasis between private-property rights and environmental protection.

Wildfire Planning: There are several wildfire planning issues related to watershed impacts and management that should be considered in the GPU. Current fire suppression activities results in the County enduring fewer large, destructive fires, and reduces high temperature soil damage, habitat destruction, and invasive species migration, and maintains or improves watershed quality. Consideration of fire suppression policies and fire ecology in all land use development, designations mentioned in the GPU should be clearly articulated.

There is a positive correlation between vineyard development and fire hazard reduction impacts. The county's Agriculture Preservation Policies have and will continue to have the positive impact of reduced Wildland Urban Interface fires.

It is important to recognize that land use policy decisions can create wildfire hazard problem areas. A wildfire hazard is a set of conditions not necessarily a location and is often a land use issues as it is a fire problem.. Even highly urbanized areas can have wildfire hazard; an example is the Oakland/Berkeley hills.

Prudent land use decisions can help to reduce wildland and urban fire hazards by establishing clear objectives and policies that avoid or carefully plan development in fire

hazard areas. Clear wildfire hazard objectives should be carried forward into zoning and subdivision ordinances in the form of local development standards. It is advisable that the Land Use element establish fire safe policies in the form of buffer zones, adequate emergency access and egress, and other planning policies in areas within or adjacent to hazardous fire areas. The element may also set forth action items to identify high priority fire hazard areas that will be subject to fire safe policies. An examination of the Land Use element in comparison with State Responsibility Area (SRA) and Local Responsibility Area (LRA) lands may show current or future conflicts with fire and resource protection. Since zoning districts are derived from land use designations, it is important to assure that those designations, policies, and ordinances are compatible with wildland protection.

Resource Conservation and Management

Forest Resources: Forest Resources are an extremely valuable natural resource in Napa County and warrant an expanded description that captures the multitude of environmental services they provide the watershed and the community.. Timber conversion to vineyard has a permanent impact on the County's forest resources. This impact, both positive and negative should be carefully evaluated to maximize the net benefit-cost for the County.. An informative forest resource section should describe methods, policies, and goals that protect and improve forest health, reduce forest cover loss, and promote sustainable forestry..

Water Resources: With projected population increases, anticipated development, and potential vineyard conversions, the GPU will need to adequately address the important goals of water quality, water use and water conservation, there by promoting responsible and appropriate use of water to conserve supplies and ensure an adequate water for future generations.

Policies that stress leadership, guidance and cooperative partnerships in water conservation should be supported by meaningful action items that address the ways and means by which Napa County will achieve these important objectives. By identifying specific action strategies (i.e., such as the Ahwahnee Principles of Water Use, attached), and identifying certain agencies and organizations with which the county will partner in developing effective conservation efforts, will more effectively support the water resources goals presented in the GPU..

The WICC concurs with comments submitted by the Napa County Resource Conservation District regarding the WICC's goals and objectives, and with their suggested language revision to Policy CON 33, as follows:

> "The County will support the work of the Watershed Information Center and Conservancy (WICC) Board as a clearinghouse for watershed information, a forum for citizen and interagency discussion and cooperation, and development and coordination of watershed monitoring efforts and strategic planning."

We believe that the suggested language more accurately reflects the WICC's Mission, Vision, Guiding Principles and Goals outlined in the WICC's 2007-08 Strategic Plan (attached).

Circulation and Traffic

Government Code Section 14000 requires that the Circulation Element in the GPU provide transportation facilities that reduce hazards to human life and minimize damage to natural resources. This provision provides an opportunity to make strong policy recommendations about transportation routes and design requirements to address these hazards such as turn-outs, helispots, safety zones and evacuation routes. The current draft of the Circulation Element lacks an acknowledgment of planned evacuation routes for wildfires and standards for road widths, egress, and roadside vegetation fire hazard reduction. Where county roads do not currently meet standards, there is no language discussing actions for bringing them up to standard.

Recreation and Open-Space

The GPU designates areas for preservation and managed production of natural resources, outdoor recreation, and public health and safety (GC Section 65560(b)(4)). Section 65560(4) of the Government Code indicates that an Open-Space element may designate "areas that require special management because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs and areas required for the protection and enhancement of air quality." The Code encourages the connecting or linking of these specially managed areas into complete networks in the interest of the public. Additionally, GC section 65564 requires an action program to implement specific programs and policies the County intends to pursue in implementing its Open-Space plan.

The County's Open-Space element should consider identification of areas warranting special management, as suggested above, and establish objectives and policies to appropriately protect the public and the environmental resources from and within these designated areas..

Safety

Structural and Wildfire Risk: There is little reference in the GPU with regards to planning, prevention, or mitigation for structural fire risk, including staffing requirements, equipment levels, water supply, prevention and education programs, and disaster preparedness support. The GPU correctly identifies a significant risk to Napa County from wildfire, but policy language and mitigations offered are weakened by the use of "shoulds" rather than "shalls" and defers details to future planning efforts.

Thank you for the opportunity to provide our comments on the GPU. We hope that our comments and suggestions are both informative and constructive, and aid Napa County in developing an enduring General Plan that reflects the varied needs and values of current and future generations of our County's watershed lands.

PRACTICE WATER CONSERVATION

after a dry winter.....

Dear Resident,

As you may know, this past winter was relatively dry. In fact, the Napa Valley only received about half of its normal rainfall. Below average rainfall during the winter season typically leads to streams drying up relatively early in the spring and summer and this can lead to stressful and even deadly conditions for our local steelhead and Chinook populations.

The Napa County Resource Conservation District has received several calls from landowners across the valley expressing concern that creeks have stopped flowing, deep pools in the creeks are drying up, and that fish are being stranded and dying. For several streams this is a natural and historical phenomenon, for others it is not. Regardless, low flow conditions in creeks can be exacerbated by directly pumping water out of the stream, by pumping water from shallow wells next to streams, and by building detention ponds directly in the stream channel. We encourage you to conserve water this summer, and to leave water in the stream for local fish.

If you would like additional information about fish in the Napa Valley or what you can do to care for creeks and watersheds in Napa County, please do not hesitate to call us at (707) 252-4188 ext. 100. You can also visit www.napawatersheds.org to find out information about our local watersheds. Thank you for your consideration.

Sincerely,

Jonathan Koehler, Senior Biologist

Steelhead Trout

NAPA RIVER SALMON MONITORING PROGRAM

SPAWNING YEAR 2006 REPORT

CHINOOK SALMON – NAPA RIVER (DECEMBER, 2006)

NAPA COUNTY, CALIFORNIA

JUNE, 2007

PREPARED BY

NAPA COUNTY RESOURCE CONSERVATION DISTRICT

JONATHAN KOEHLER
SENIOR BIOLOGIST
(707) 252 – 4188 X 109
JONATHAN@NAPARCD.ORG

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ACKNOWLEDGEMENTS

The Napa RCD would like to thank all landowners who granted us access to their property. We would also like to thank Mike Napolitano and Anna Holder for their assistance with fieldwork.

This program was funded by the Conservation Division of the Napa County Conservation, Development and Planning Department.

Additional funding for underwater photography was provided by a grant from the Wildlife Commission of Napa County.

This report and reports from previous years are available online at http://www.napawatersheds.org

BACKGROUND

During the past five years, an estimated run of 400-600 fall-run Chinook salmon (*Oncorhynchus tshawytscha*) have spawned annually in the mainstem Napa River and several tributary streams (Koehler 2005; Koehler 2006). The Napa County Resource Conservation District (RCD) initiated an ongoing salmon monitoring program in 2003 to assess Chinook abundance, distribution, and spawning success within the Napa River basin. This year's monitoring included genetic analysis of tissue samples collected from recovered carcasses to determine the relationship between Napa River Chinook and other known stocks.

Very little is known about historical Chinook salmon abundance and distribution in Bay Area streams. In a recent review of existing fisheries information, no conclusive evidence of historical Chinook salmon populations could be found for the Napa River basin (Leidy et al., 2005). However, based on analysis of natural channel form, hydrology, and ecology, the Napa River likely supported a large, sustainable population of Chinook salmon under historical conditions (Stillwater Sciences, 2002). Additionally, the geographic location of the Napa River at the entrance to the Sacramento/San Joaquin River systems makes it likely that wild Chinook salmon would naturally stray into the Napa River during favorable periods.

During the past 150 years, a combination of factors including reduction in spawning habitat, channel and floodplain alterations, and the introduction of exotic predatory fishes have all reduced the river's potential to support a viable population of Chinook salmon. Today, there are approximately 25 miles of suitable Chinook spawning habitat in the mainstem Napa River and an additional 15 miles within low gradient reaches of several large tributaries.

METHODS

Spawner surveys were conducted following California Department of Fish & Game protocols as described in the California Salmonid Stream Habitat Restoration Manual (Appendix A). Redd locations were recorded using a handheld Garmin GPS unit and marked with flagging. The excavated redd area was measured using a graduated gaff hook handle, and the specific type of habitat (pool, glide, riffle, run) where the redd was constructed was also recorded. Surveys were conducted in three survey reaches of the Napa River (Figure 1).

A snorkel survey was conducted in the mainstem Napa River between the Oakville Crossroad and Oak Knoll Avenue in May, 2007 to document the fish community in this reach with emphasis on the abundance and distribution of salmonids.

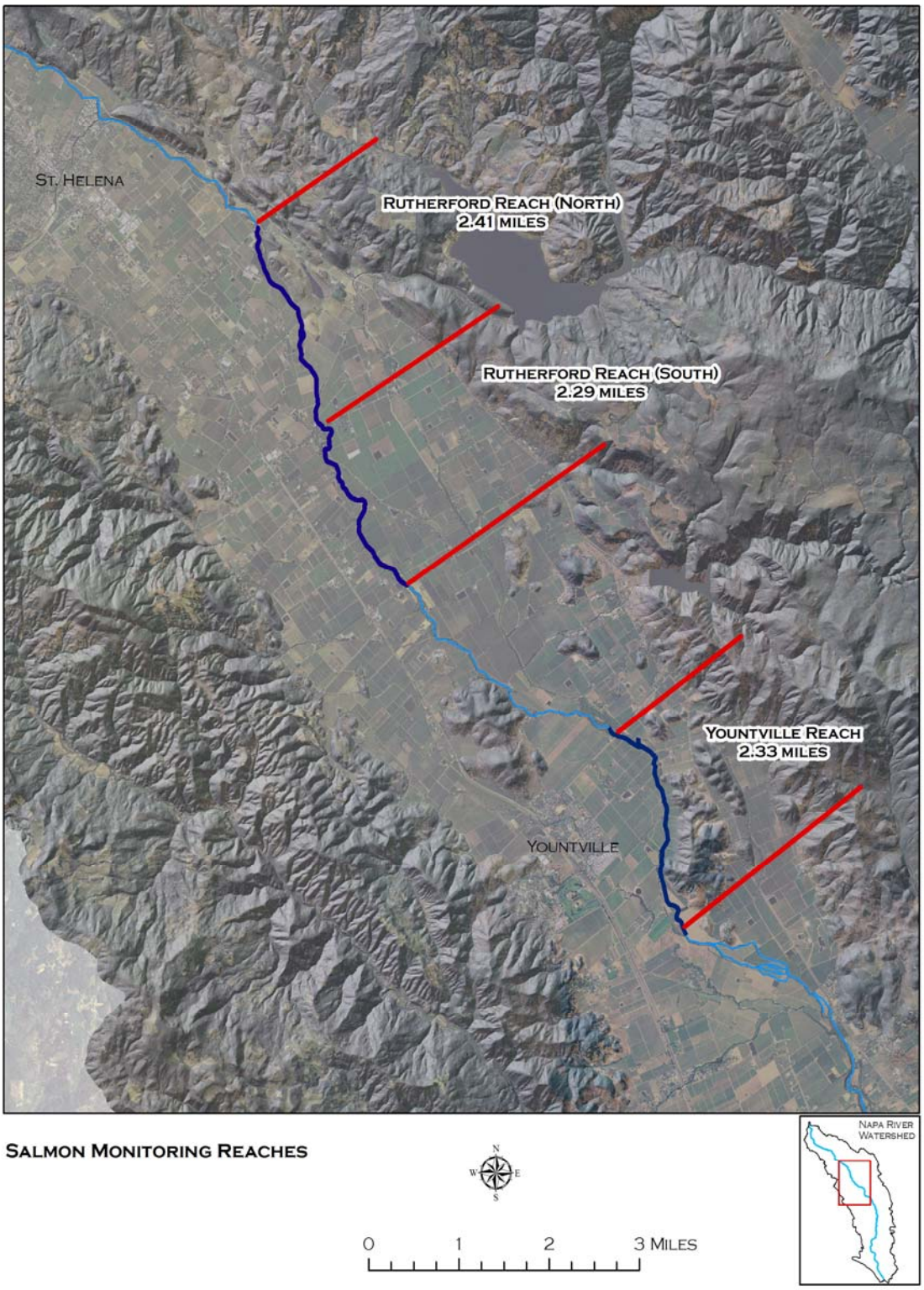

Figure 1. Location Map showing three sampling reaches along the mainstem Napa River. Note: a snorkel survey was conducted beyond these reaches between Oakville Crossroad and Oak Knoll Ave.

RESULTS AND DISCUSSION

Napa RCD staff conducted a total of nine spawner surveys in three sampling reaches of the Napa River between December 1, 2006 and January 12, 2007. We counted a total of 128 redds in approximately seven stream miles, which was the highest count in three years of monitoring. When compared with previous years, redd counts in the 4.7 mile Rutherford reach show a stable or slight upward trend, suggesting that a small self-sustaining run of salmon is present in the Napa River (Figure 2).

Much of this year's spawning activity was in our northern-most sampling reach, with the highest spawning densities just downstream of the Zinfandel Lane Bridge (Figure 5). Consistent with observations in 2004 and 2005, the majority of salmon were unable to pass the concrete bridge apron during low flows and eventually spawned in the downstream vicinity of the bridge. Work is currently underway by the RCD and others to improve fish passage at Zinfandel Lane.

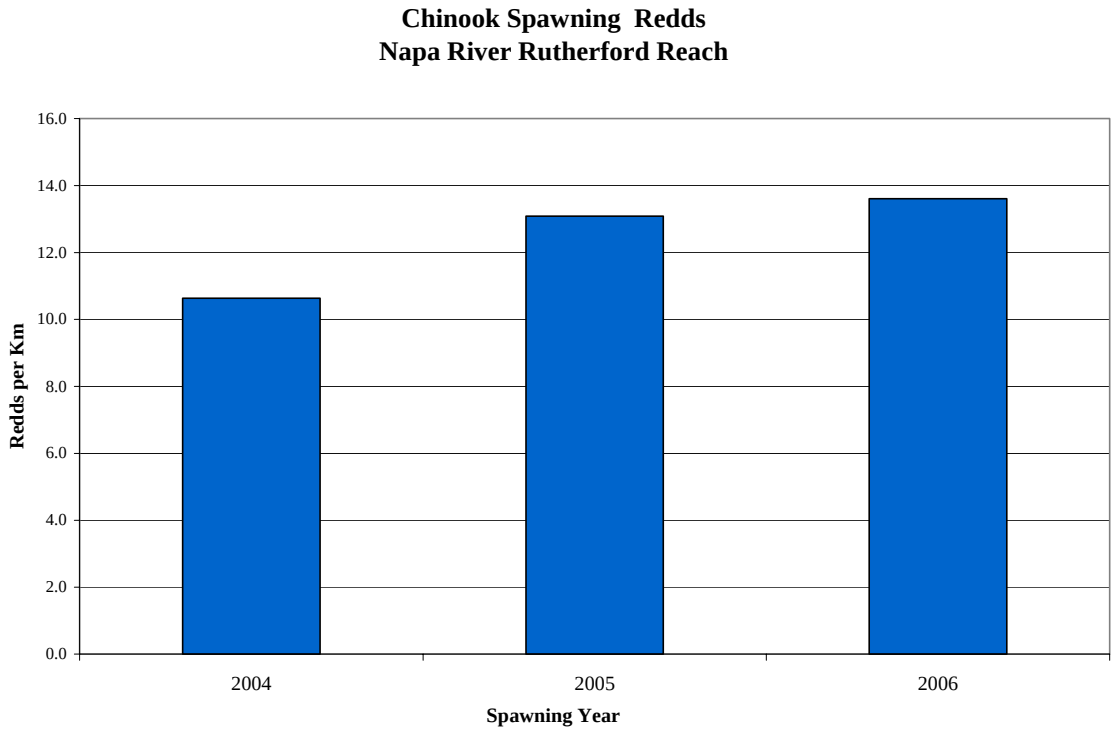

Figure 2. Redd density data from the Napa River Rutherford reach from 2004-2006. Note this does not include data from the Yountville reach, as this is the first year we have monitored that section of the river. (1km = 0.62 miles)

Spawning redds were built most frequently in riffles and pool tail crests (Figure 3). The median redd size was 6 m^2, with a range of 1m^2 -30m^2 (larger redds were typically counted as multiple redd complexes if several clearly defined excavation holes were apparent). Most redds were constructed in areas with gravel and small cobble substrates, however several redds, specifically those in glide habitats, were observed in areas with primarily sand and small gravel substrates.

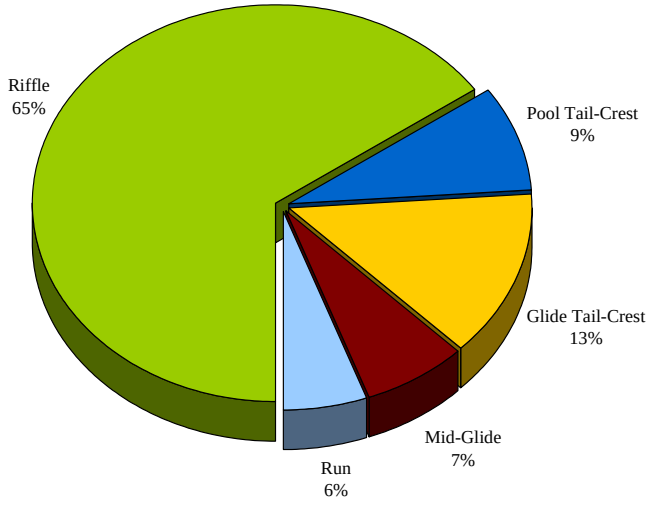

Figure 3. Redds by Habitat Type. Habitat type definitions given by the California Department of Fish and Game, California Salmonid Stream Habitat Restoration Manual, 2002. Tail-crest refers to the area at the downstream end of a pool or glide unit where it transitions into moving water (e.g. riffle, run, etc.).

A total of 244 live adult salmon[1] and 45 carcasses were observed during our surveys (Table 1). No carcasses or live fish had visible hatchery markings (i.e. clipped adipose fin or other fin clips). Tissue samples were collected from 40 of the carcasses and sent to the National Marine Fisheries Service lab in Santa Cruz for genetic analysis. Tissue samples will be compared to other salmon stocks to determine whether Napa fish are descended from known populations or represent a unique local strain. Additional genetic analysis for Single Nucleotide Polymorphisms (SNPs) will be conducted to begin building a parent database for Napa River salmon. Results from these analyses will be available in late 2007.

[1] Cumulative live fish counts during spawner surveys are not an accurate measure of population size because fish may be counted multiple times during consecutive surveys.

Survey Date	1-Dec-2006	5-Dec-2006	7-Dec-2006	15-Dec-2006	18-Dec-2006	20-Dec-2006	3-Jan-2007	5-Jan-2007	12-Jan-2007
Sampling Reach	**NR-Y**	**NR-S**	**NR-N**	**NR-Y**	**NR-S**	**NR-N**	**NR-S**	**NR-N**	**NR-N**
Survey distance (ft)	12,302	12,110	12,724	12,302	12,110	12,724	12,110	12,724	12,724
Live Chinook observed	8	12	0	26	18	141	3	30	6
Chinook carcasses	4	2	0	1	3	6	2	17	10
Mean fork length (cm)	83	83	N/A	68	84	73	87	81	76
Range fork length (cm)	80-85	83	N/A	68	77-90	57-90	86-88	63-101	64-86
Fin clipped fish	0	0	0	0	0	0	0	0	0
Skeletons	0	1	0	1	3	0	4	14	8
Newly constructed redd count	7	6	0	18	26	69	0	2	0

Table 1. Summarized salmon spawner/redd survey data. NR-Y = Yountville Reach, NR-N = Rutherford Reach North, NR-S = Rutherford Reach South.

RCD staff conducted a snorkel survey of the Napa River on May 8-9, 2007, between Oakville Crossroad and Oak Knoll Avenue. This reach is approximately 8.5 miles long. The purpose of the survey was to document the fish community of the river in this reach and observe relative density and distribution of juvenile salmonids. Water temperatures during the snorkel survey ranged from 18° - 19.5° C, and most pools felt thermally stratified. Flow was approximately 18 cfs, as measured at the USGS streamgage at Oak Knoll Ave.

Chinook salmon parr were abundant throughout the survey reach, and appeared to be highly associated with moving water habitats (e.g. riffles, runs). Small groups of parr were typically seen holding in feeding lanes at the tops of swift-water habitats mixed with schools of native minnows and suckers. The average size of most Chinook parr observed was approximately 90mm (~3.5 inches). Very few parr were observed in the deepwater areas of pools or glides, where we documented consistently large schools of Sacramento pikeminnow (*Ptychocheilus grandis*), hardhead (*Mylopharodon conocephalus*), and Sacramento sucker (*Catostomus occidentalis*).

Figure 4. Juvenile Chinook salmon captured (and released) in the Napa River near Yount Mill Road. (May 12, 2007)

Average densities of juvenile salmon ranged from about 15-20 fish per riffle/run sequence in the upstream sections of the survey to about 20-30 fish per riffle/run sequence near the downstream end. The higher densities we observed in downstream reaches coupled with the silvery appearance of most fish suggests that active outmigration was occurring at the time of survey. Based on favorably mild hydrologic conditions during the incubation period (January – March) and the high number of juvenile salmon observed in late spring, it appears that reproductive and early rearing success for the 2006 cohort was relatively high.

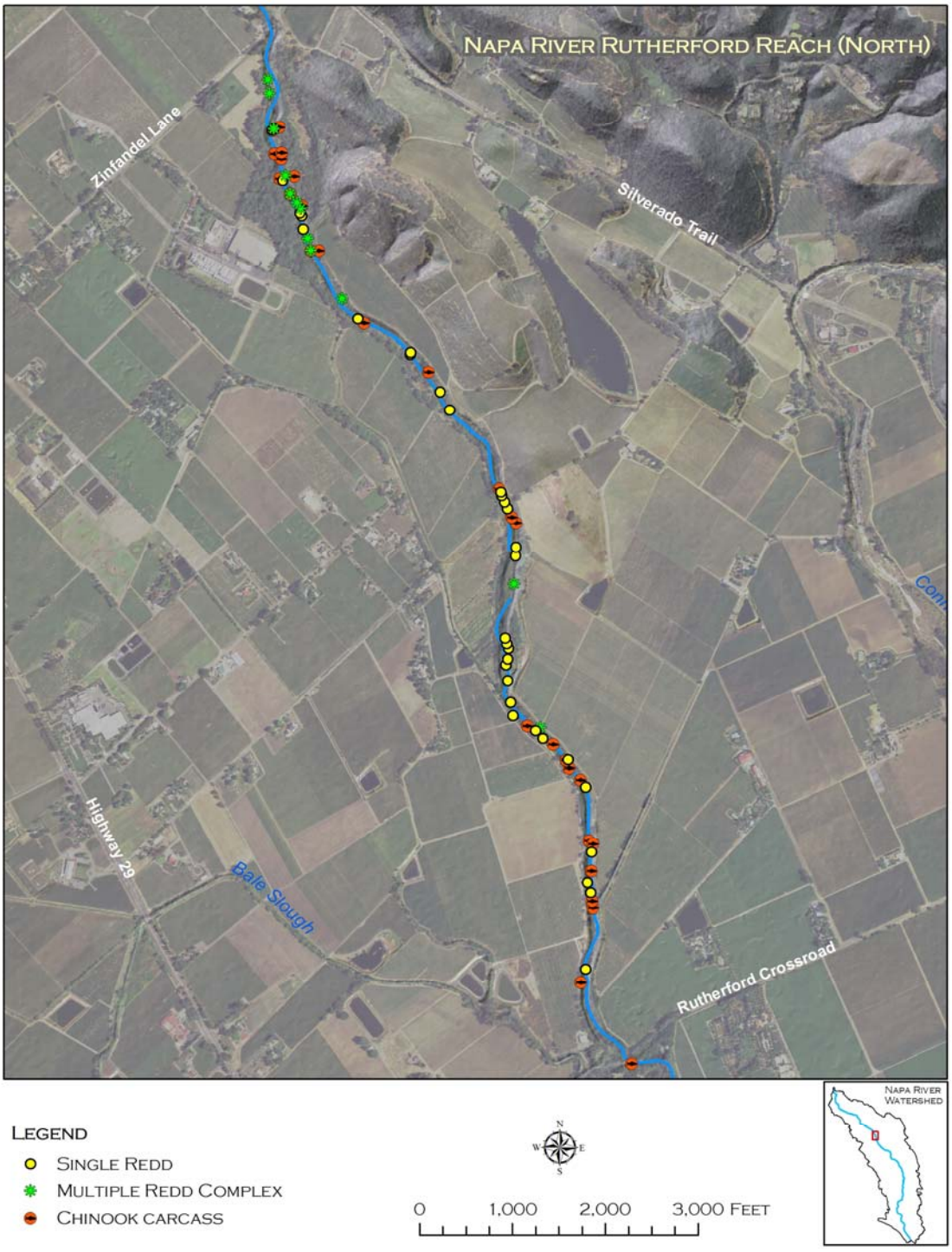

Figure 5. Chinook spawning redd locations on the Napa River between the Zinfandel Lane Bridge and the Rutherford Crossroad Bridge. Note the high density of redds and multiple redd complexes at northern end of this reach, which is likely due to limited passage at Zinfandel Lane Bridge.

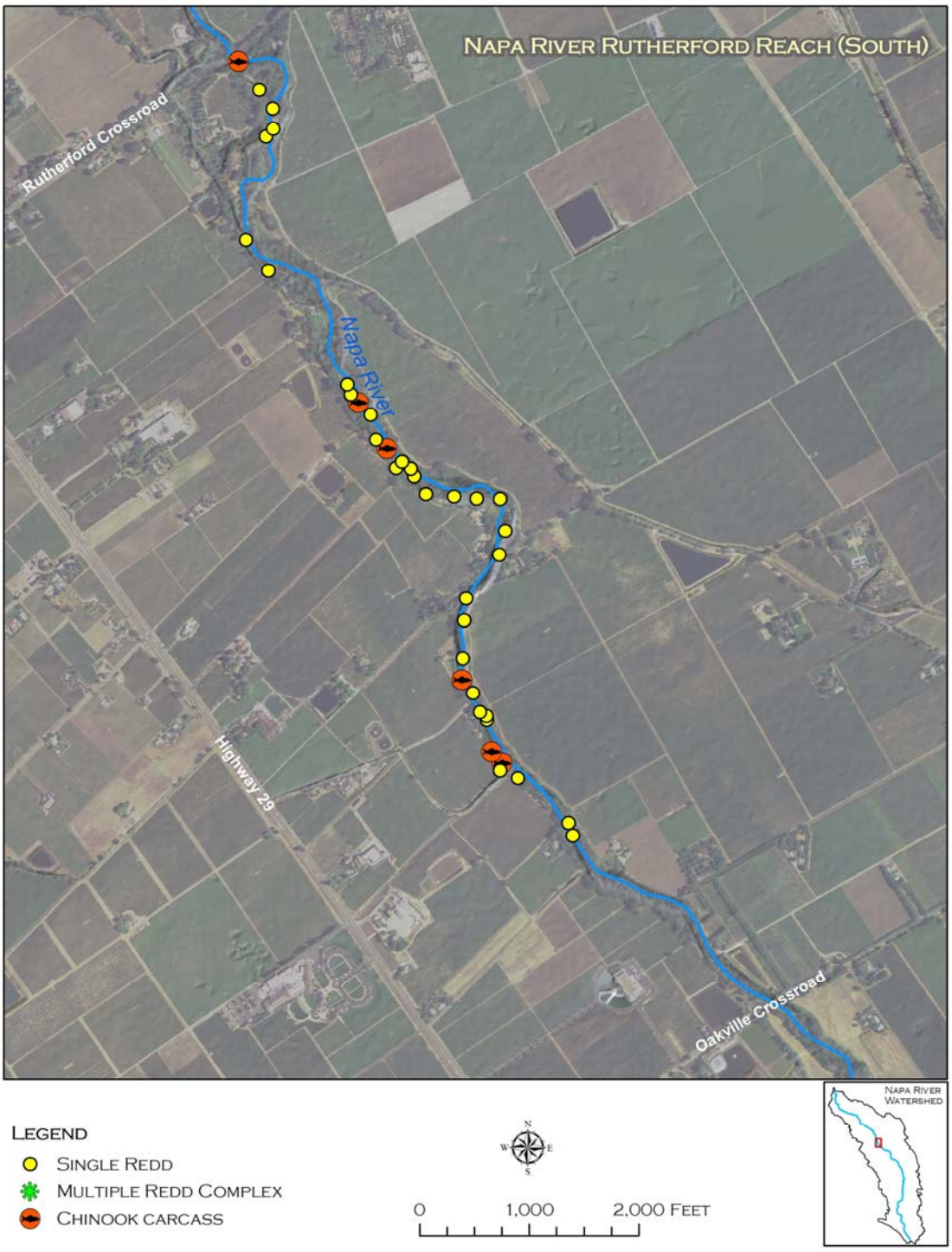

Figure 6. Chinook spawning redd locations on the Napa River between the Rutherford Crossroad and the Oakville Crossroad.

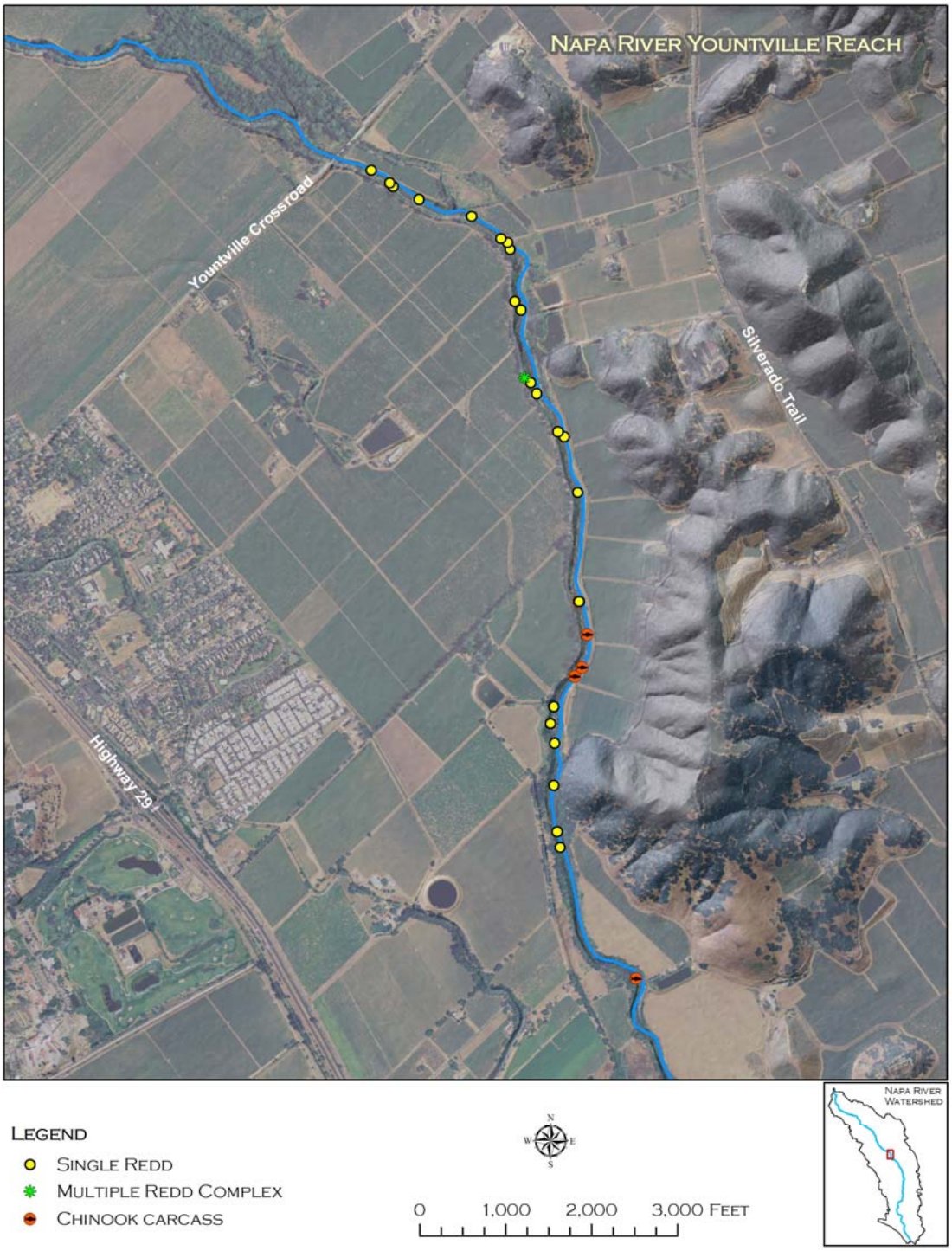

Figure 7. Chinook spawning redd locations on the Napa River downstream of Yountville Crossroad.

Figure 8. Female Chinook salmon carcass (unspawned) recovered in the Napa River near Yountville Crossroad. (December 1, 2006)

Figure 9. Collecting a tissue sample for genetic analysis from a decaying salmon carcass. (January 5, 2007)

Figure 10. Female Chinook salmon freshly killed, presumably by a coyote observed by the field crew. Note eggs on the ground near the carcass. (December 5, 2006)

Figure 11. Typical male Chinook salmon carcass. (December 20, 2006)

CONCLUSIONS AND RECOMMENDATIONS

It is difficult to determine the current population status of Chinook salmon in the Napa River basin given the limited data available. Based on our juvenile and adult surveys, it appears that a reproducing, broadly dispersed, population of Chinook salmon is now established in the Napa River basin, and that there is sufficient habitat available in the mainstem and lower reaches of several large tributaries to support this small run of fish.

Further monitoring efforts, including quantitative measurements of smolt production, are needed to examine long-term trends and spawning success of Chinook salmon in the Napa River. This monitoring strategy should include the following components:

- Continue annual spawner surveys using established protocols in the Rutherford reach and other reaches as landowner permission allows.
- Conduct outmigrant trapping in the mainstem Napa River to generate smolt production estimates and details on smolt size and timing.
- Continue collecting genetic data, specifically SNP information, which can be used to gauge spawning success and life history details that are currently unknown.
- Expand the geographic scope of spawner surveys to include 5-10 additional miles of the Napa River between St. Helena and Calistoga.
- If outmigrant trapping is not funded, continue annual snorkel surveys in spring within the established sampling reaches.

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APPENDICES

APPENDIX A: SALMON SPAWNER SURVEYS

CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL
FISH SAMPLING METHODS IV-7
California Dept. of Fish & Game

Salmon spawner surveys (also called salmon carcass surveys) are stream bank or above-water surveys. Surveyors usually walk along the stream bank and record the number of spawned salmon carcasses, redds, and live adults. This information is useful to:

- Determine if adults are returning to and spawning within a stream reach or basin area;
- Determine which species or races are utilizing the sample area;
- Determine relative abundance and distribution of carcasses, redds or live fish within a sample area;
- Recover and record marked fish for mark studies;
- Identify preferred spawning habitat area.

Stream flow conditions can alter the timing and distribution of spawning activity from one year to the next. For annual *comparison of data it is recommended that weekly surveys be conducted throughout the entire potential time range of spawning activity.
Descriptions of spawning distribution within a basin should not rely on carcass counts conducted only during the assumed week of peak spawning. Spawner distribution within a stream system may be different for early versus late spawners.

The typical method for conducting spawner surveys is to walk along the stream bank or wade in the stream counting and recording all carcasses, redds and live fish observed. Carcasses are examined to determine species, sex, and/or missing fins. The fork lengths (FL) of fish are measured from the tip of the snout to middle of the tail to the nearest centimeter (cm). Counted carcasses are either cut in half or marked with a hog ring to eliminate being counted in subsequent surveys. With prior DFG approval, the heads of carcasses with missing adipose (Ad) fins, will be removed and retained for coded-wire-tag (CWT) extraction by DFG. All data is recorded on the Daily Salmon Spawning Stock Survey Field Form as indicated below.

Tools and Supplies Needed

- Thermometer
- Gaff hook, handle marked. in centimeters
- Waders with non-slip soles
- Pencils
- Waterproof field record form
- Waterproof ID tags_ for fish heads (Figure 11)
- Plastic "Ziploc" bags for fish heads
- Machete – and file or hog-ring-pliers and hog rings

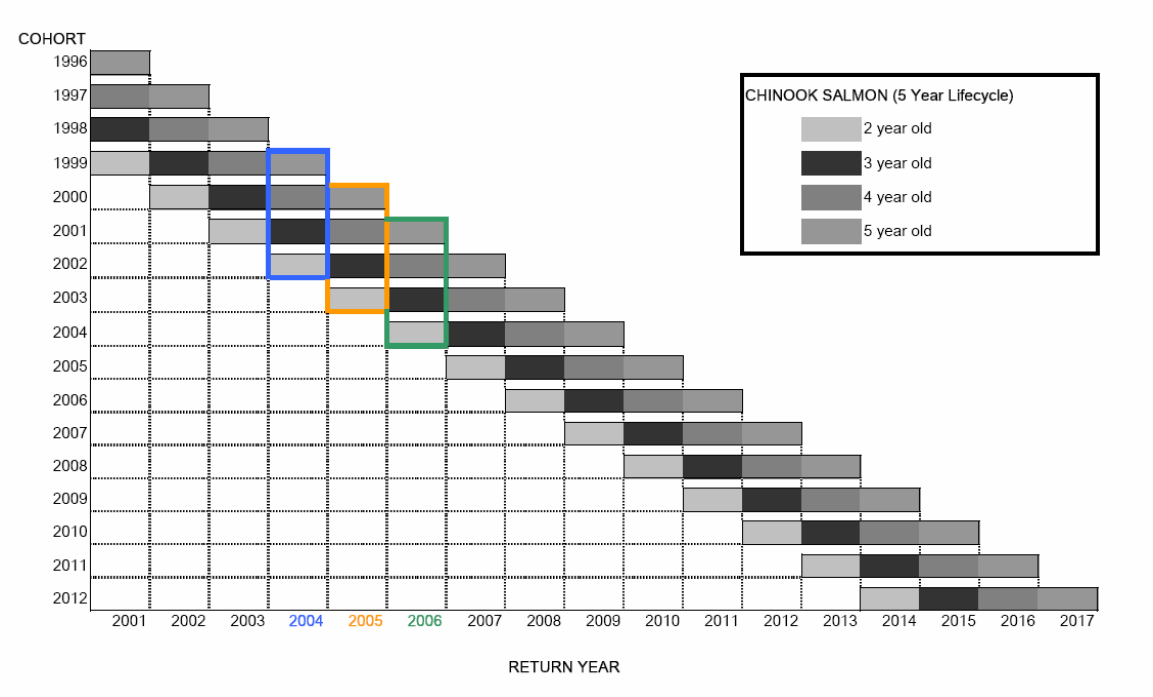
 Vest or day pack'
 Polarized glasses
 Stream map to indicate location of spawning activity
 Drinking water and food

Instructions for Completing Daily Salmon Spawning. Stock Survey Field Form
1) **Stream** - Print the stream name.
2) **T-R-S** - Enter the township, section and range from the USGS quadrangle.
3) **Lat** - Latitude of the confluence of the stream determined from a 7.5-minute USGS quadrangle.
4) **Long** - Longitude of the confluence of the stream determined from a 7.5-minute USGS quadrangle.
5) **Quad** - Name of the USGS 7.5-minute quadrangle containing the confluence of the stream.
6) **Drainage** - Print the drainage name.
7) **County** - Enter the county in which the stream. is located
8) **Starting location** - Enter the starting point of the survey; for example, the confluence with another stream, a highway mileage marker, a bridge, etc.
9) **Lat and Long of the starting location** - Taken from a 7.5-minutes USGS quadrangle.
10) **Ending Location** - Enter the ending point of the survey; for example, the confluence with another stream, a highway mileage marker, a bridge, etc.
11) **Lat and Long of the ending location** - Taken from the 7.5-minute USGS quadrangle.
12) **Feet/miles surveyed** - Determine the distance of the survey using a map measurement device and a 7.5-minute USGS quadrangle. If the distance surveyed was measured using a hip chain, enter the distance in feet.
13) **Date of survey** - Enter the day's date: nm/dd/yy.
14) **Weather,-** Make a check mark to indicate weather conditions: clear, overcast, rain. If weather conditions chancre during the survey, note this in the remarks section at the end of the page.
15) **Water clarity** -Estimate water clarity at the beginning of the survey. If water clarity changes during the survey, note this in the remarks section at the end of the page.
16) **Water temperature** -Water temperature is taken in degrees Fahrenheit at the beginning of the survey.
17) **Air temperature** - Air temperature is to be taken in degrees Fahrenheit- at the beginning of the survey.
18) **Time** - Time when temperatures were taken.
19) **Crew** - Enter the names of the persons doing the survey.
20) **Number of live fish observed** - Enter the number of live chinook adults, chinook jacks (< 55 cm FL), coho, and steelhead observed. Identification of live fish can be very difficult. If positive identification is not possible, record the fish as an unknown.
21) **Number of carcasses examined** - Identify all carcasses to species and sex. Measure fork length in centimeters and record on the form. Examine all carcasses for adipose fin clips or any other fin clip. Mark all the carcasses using hog rings or cut carcasses in half after examination.
22) **Tag number of adipose-clipped fish and snout recoveries** - All carcasses must be examined for adipose fin clips. If the adipose fin is missing, the carcass may contain a CWT and the snout must be cut off and retained. Remove the snout by cutting across the head in the vicinity of the eyes; cut straight down from the eyes through the upper jaw and into the mouth cavity. Remove the snout in one piece. If unsure of the removal procedure; take the entire head. It is important not to lose the tag due to an improper cut. The project name, the recovery location, the species, length and sex of the fish, date and other relevant information must be recorded on a tag and wired to the snout. The project name will be recorded on the tag for later reference. The

snout or head must be frozen in a zip-lock bag and taken to DFG, where the coded-wire tags will be excised and decoded. Snouts must be individually bagged.
23) **Other fin clips observed** - Record any fin clips observed other than adipose fins.
24) **Number of skeletons observed** - Any fish that cannot be measured, or any identifiable parts of fish found are considered skeletons.- If it is possible to identify the species, record it appropriately; if not, record it as unknown.
25) **Number of redds observed** - Record the number and location of observed redds. This can be difficult in areas of heavy spawning due to multiple redds and superimposition of redds.
26) **Remarks** - Add any, information discovered during the. survey such as barriers, landslides, etc. Include any information necessary to clarify other entries on the field form.

Salmon CWT Recovery Tag			
Tag No.			
Project			
Location:			
Lat			
Long			
Species			
Race	Fall	Win	Spr
Sex	M	F	U
Recovery method			
Date			

APPENDIX B: Chinook Salmon Return Year Diagram



Chinook salmon return-year diagram depicting typical age class structure for returning adults. Salmon observed during the 2006 spawning year were comprised of fish from the 2001 through 2004 cohorts.

APPENDIX C: Spawner Survey Details

	SURVEY 1	SURVEY 2	SURVEY 3	SURVEY 4	SURVEY 5	SURVEY 6	SURVEY 7	SURVEY 8	SURVEY 9
Date	**12/1/2006**	**12/5/2006**	**12/7/2006**	**12/15/2007**	**12/18/2006**	**12/20/2006**	**1/3/2007**	**1/5/2007**	**1/12/2007**
Stream	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River
Start time	9:10 AM	9:00 AM	9:15 AM	12:55 PM	10:00 AM	9:20 AM	9:00 AM	1:40 PM	11:15 AM
End time	12:10 PM	11:10 AM	11:25 AM	4:00 PM	1:20 PM	12:35 PM	11:00 AM	4:10 PM	1:15 PM
Drainage	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River	Napa River
County	Napa County	Napa County	Napa County	Napa County	Napa County	Napa County	Napa County	Napa County	Napa County
Start location	Mondavi Vnyds (pump)	Oakville x-rd	Rutherford x-rd	Mondavi Vnyds (pump)	Oakville x-rd	Rutherford x-rd	Oakville x-rd	Rutherford x-rd	Rutherford x-rd
End location	Yountville x-rd.	Rutherford x-rd	Zinfandel Lane	Yountville x-rd	Rutherford x-rd	Zinfandel Lane	Rutherford x-rd	Zinfandel Lane	Zinfandel Lane
Start latitude	38.39213	38.44664	38.46452	38.39213	38.44664	38.46452	38.44664	38.46452	38.46452
Start longitude	-122.33941	-122.38222	-122.41202	-122.33944	-122.38222	-122.41202	-122.38222	-122.41202	-122.41202
End latitude	38.41825	38.46452	38.49512	38.41825	38.46452	38.49512	38.46452	38.49512	38.49512
End longitude	-122.35191	-122.41202	-122.42582	-122.35191	-122.41202	-122.42582	-122.41202	-122.42582	-122.42582
Survey Distance (feet)	12302	12110	12724	12302	12110	12724	12110	12724	12724
Survey Distance (miles)	2.33	2.29	2.41	2.33	2.29	2.41	2.29	2.41	2.41
Weather	clear	clear	clear	overcast	clear	overcast	overcast / light rain	clear	clear
Water clarity	> 4 ft.	> 4 ft.	> 4 ft.	2-4 ft.	> 4 ft.	> 4 ft.	> 4 ft.	> 4 ft.	> 4 ft.
Air temp (c)	9	10	8.5	15	8.5	3	N/A	11	7
Water temp (c)	7	10.5	7	12.5	7	6	N/A	9	6
Crew:	Jonathan Koehler, Chad Edwards	Jonathan Koehler, Chad Edwards	Jonathan Koehler, Chad Edwards, Shannon Fiala	Jonathan Koehler, Chad Edwards	Jonathan Koehler, Chad Edwards	Jonathan Koehler, Chad Edwards, Mike Napolitano, Anna Holder	Jonathan Koehler, Chad Edwards	Jonathan Koehler, Chad Edwards	Jonathan Koehler, Chad Edwards