Promoting
Multi-Benefit Water Projects
in the North Bay
and the Greater Bay Area

A report on the "Obstacles and opportunities for integrated water management projects in the North Bay Watershed Association Region" Project, funded by the North Bay Watershed Association

Final Draft

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Project Summary

Note: The term "multi-benefit water project" as used in this report is synonymous with the term "integrated water management project."

Need for Project

Forces such as population growth, environmental constraints, climate change, and integrated land use planning are driving a fundamental change in water management. The State of California is tying substantial water management funding to the development of Integrated Regional Water Management Plans (IRWMPs) which emphasize multi-benefit, integrated projects and strategies. The North Bay Watershed Association (NBWA) recognizes that many water management challenges are best approached through projects which combine two or more of the following benefits: flood reduction, water supply, water treatment, habitat enhancement, aesthetics, recreation, and water quality. Yet when NBWA surveyed its stakeholders to create an inventory of water and watershed projects as part of the North Bay IRWMP (December 2005), the inventory did not reflect this desire for more multi-benefit projects. Instead, the projects tended to represent the priorities of either water supply and treatment agencies, or non-governmental organizations (NGOs) and trustee agencies. Multi-benefit projects that combine the interests of both these groups are rarely identified or pursued. This mismatch between today's project inventory and tomorrow's desired project inventory is common across the state. To the degree that NBWA can help develop more multi-benefit projects, it will be a leader in the statewide effort at integration.

Approach

Recognizing that water players in the north bay already possess much of the collective wisdom, insight, and creative thinking needed to support a wave of successful multi-benefit projects, we conducted interviews with more than 20 people from agencies and NGOs serving all the major watersheds in the region (see Appendix A, List of Interviewees)We talked with people from stormwater and flood agencies, watershed groups, water suppliers, water agencies, open space organizations, Resource Conservation Districts, environmental and policy nonprofits, elected officials, Army Corps of Engineers, and environmental consultants. Interviewees were asked about their experiences with multi-benefit projects; ideas for future ones; what barriers exist to implementing these types of projects; and what has worked, or could work, to surmount these obstacles(see Appendix B, Interview Questions) Interviews were distilled and the responses analyzed for patterns, looking for what benefits were most or least often combined (see Appendices C and D for Multi-Benefit Project Lists) and what the common obstacles were and how have they been surmounted in the past (see Appendixes E and F). Based on these analyses, we then made the recommendations given below.

Findings

In the course of the interviews, 58 completed or conceived multi-benefit projects were identified. Half of these (29) combined two benefits, and the other half combined three or more benefits. Habitat enhancement and flood reduction were the most commonly combined benefits. Triple-benefit projects most commonly combined habitat enhancement, flood reduction, and water supply. Two projects combined five benefits: the Napa Living River project, and the Ellis Creek Water Recycling facility near Petaluma.

The most commonly mentioned obstacles to implementing multi-benefit projects were: no one is thinking about the big picture or taking the lead (71%); a lack of resources (funding and/or staff) (57%); poor communication between the entities involved (38%); and the difficulty in quantifying the benefits of integrated projects (33%). Other obstacles included: lack of regulation or enforcement; confusing jurisdiction; daunting permitting process; lack of quantitative knowledge about basic questions; private property issues; challenges with recycled water; and a lack of political will for water regulation or mandates.

Recommendations

Over the last few years NBWA has made a significant effort to increase the amount of "integrated thinking" in the north bay. The next step is to develop ongoing mechanisms that focus on accomplishing multiple water benefits over time; and to include elected officials, watershed groups, and community groups in the project development process. The existing North Bay IRWMP offers a solid foundation from which to begin taking this next step. However, IRWMPs so far have only prioritized ready-to-go projects. If new thinking is to be encouraged, the North Bay IRWMP needs to be fundamentally revised to include and emphasize projects that are not yet "ready-to-go."

Based on the experience, insights, and creative ideas captured in the interviews, we recommend an approach which incorporates the lessons learned from successful, multi-benefit projects, and addresses the obstacles mentioned above. Our recommended approach is two-pronged:

1) Develop **project-scale tools** ("bottom up") to integrate multiple benefits into existing or conceived projects. This would involve the creation of guidelines for "Making Your Project Multi-Benefit," written by agency managers and design staff, and reviewed by stakeholders. Incorporated early in the design process, the guide-lines would walk staff through a logical process to identify ways to incorporate additional benefits; assist in calculating cost-benefit analyses which recognize savings from achieving multiple benefits and utilize a longer time frame than today's cost-benefit analyses; encourage "self-mitigating" projects; and support the creation of inter-departmental design teams.

2) Develop **regional-scale processes** and structures ("top down") to promote multi-benefit water projects in the north bay. This could be achieved by developing a governance

structure among existing stakeholders; holding regular forums focused on integrated management; creating a new entity; or some combination of these. Whatever the structure is, the process needs a broader mission than just water, one that includes quality of life, healthy environment, and a sustainable economy. This broader vision would ensure that water planning integrates with other types of planning, as it should. To accomplish this, we suggest developing a hybrid approach that includes both the counties and individual watersheds. The process would develop, using the existing North Bay IRWMP as a starting point, a guiding document for integrated, sustainable water management, to which all water players would pledge consistency.

We recommend regular forums organized around geographic areas, with annual forums based on watersheds (east Marin creeks, Petaluma River, Sonoma Creek, Napa River), a bi-annual North Bay forum, a Bay Area forum, and an occasional Sonoma County Water Agency system area forum. The focus and goal of these forums would be to reach agreement on projects and approaches for integrating the highest priority benefits for each geographic area. To ensure a balanced and transparent process, these forums would be facilitated by a third party and include all stakeholders: water supply agencies, sanitation districts, public works departments, parks and open space districts, resource conservation districts, NGOs, watershed groups, elected officials, and the general public. From our surveys, it appears the full participation of these last several interests are necessary for success.

Out of these forums, several committees or workgroups would be formed from existing entities such as NBWA, Coordinating Committee for the Bay Area IRWMP, North Bay Watershed Network, and the Watershed Council, to move from broad goals to specific projects and actions. To ensure successful projects, all of these aspects need nearly equal attention: technical, financial, environmental, public outreach, and aesthetics.

Finally, our regional-scale recommendations include enhancing or creating systems for collecting, organizing, analyzing, and providing access to water-related data; developing a baseline and continuing to monitor water quality and quantity; developing long term, within-region funding sources for integrating water management; and integrating water priorities with other regional planning efforts for transportation, land use, and open space.

APPENDIX A

LIST OF INTERVIEWEES

Misti Arias, Sonoma County Agricultural and Open Space District

Larry Barnett, former Mayor, City of Sonoma

Betsy Bikle, Mill Valley Streamkeepers

Caitlin Cornwall, Sonoma Ecology Center, Sonoma Valley

Jack Curley, Marin County Department of Public Works

Chris DeGabriele, North Marin Water District

Jason Dow, Central Marin Sanitation Agency

Sandra Guldman, Friends of Corte Madera Creek

Tim Hampton, Marin County Flood Control and Water Conservation District

Paul Helliker, Marin Municipal Water District

Susan Haydon, Southern Sonoma County Resource Conservation District

Bill Keene, Sonoma County Water Agency

Krishna Kumar, Valley of the Moon Water District

Sue Lattanzio, Friends of Novato Creek

Liz Lewis, Marin County Stormwater Pollution Prevention Program

Karen Rippey, U.S. Army Corps of Engineers; Friends of the Napa River

Andy Rogers, Private consultant; Friends of the Petaluma River; Riverworks

Leigh Sharpe, Napa Resource Conservation District

Gary Wolff, State Water Resources Control Board; Pacific Institute

David Yearsley, Friends of the Petaluma River

Steve Zeiger, City of San Rafael Stormwater Program

APPENDIX B

INTERVIEW QUESTIONS

PAST PROJECTS

- Are past integrated projects you've worked on already in the inventory?
- If not, where were they and who is the most knowledgeable person(s) about them?
- Did these projects meet their goals?
- What lessons were learned?
- How did the cost and difficulty compare with doing multiple single-purpose projects?

FUTURE PROJECTS

- What future integrated projects are in the conceptual or design phase?
- What are the goals of these projects?
- What are the obstacles to carrying out these projects?
- What will help these projects come to fruition?
- What institutional and/or cultural barriers are obstacles to integrated water management?
- What would it take to remove these barriers?
- What technical, financial, design, or regulatory barriers are obstacles to integrated water management?
- What would it take to remove these barriers?

GENERAL

- What opportunities do you see for integrated water management?
- What specific types of integrated projects do you think have the most chance of success?
- How do the interests of other water players in your area relate to your interests?
- Do you have any ideas of ways to fund integrated projects?
- What would help make more integrated projects happen?
- What do you think about a yearly networking workshop?
- What would help identify opportunities for integrated projects? (If you could change one thing about the way projects are currently handled to increase the number of integrated projects, what would that be?)
- Do you have any project-specific solutions?
- What do you see as the benefits of planning and implementing integrated projects?
- What types of integrated projects especially deserve support?
- What steps could be taken to increase the number and effectiveness of integrated projects in the North Bay?
- Who are logical partners for you?

APPENDIX C

SPECIFIC MULTI-BENEFIT PROJECT LIST

Note: Projects listed by watershed, clockwise from southern Marin to Napa.
Bolded Names in parenthesis are interviewees who provided information about the project.

MILL VALLEY WATERSHED

Retractable Culvert Baffle (Bikle) — developing a baffle to be used on culverts on Arroyo Corte Madera and Old Mill to concentrate water in the middle of the culverts during low flow, but would retract during high water. Status: in progress.

Benefits: Flood Protection, Habitat Enhancement,

Partners: City of Mill Valley, Marin County Flood Control & Water Conservation District, Mill Valley Streamkeepers, Marin Municipal Water District

Park Terrace Park (Bikle) — park which flooded last year and is now being seen as both a holding basin and a park. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Recreation

Potential Partners: City of Mill Valley, Marin County Flood Control & Water Conservation District, Mill Valley Streamkeepers, Marin Municipal Water District

Watershed Education Project (Bikle) – carrying information to landowners and developers (doesn't know of anyone who knows how to do that.). Developers are interested in being green if it decreases their costs. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality, Water Supply

Potential Partners: Marin Municipal Water District, Mill Valley Streamkeepers, City of Mill Valley, Marin County Water Conservation & Flood Control District, California Department of Fish & Game

Rain Gardens (Bikle) – holding basins which fill up when it rains and then the water slowly infiltrates into the groundwater. Status: largely conceptual; one has been funded to date.

Benefits: Flood Protection, Water Supply, Water Quality

Potential Partners: Developers, City of Mill Valley, Marin County Water Conservation & Flood Control District

Permeable Parking Lots (Bikle) – on either side of Park Terrace Park. Make them both permeable, one could have a vegetated swale. Status: conceptual.

Benefits: Flood Protection, Water Supply, Water Quality

Potential Partners: Developers, City of Mill Valley, Marin County Water Conservation & Flood Control District, Private landowner

Coyote Creek (Hampton) – Flood Protection project, would create new channels which may enhance clapper rail habitat. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Potential Partners: Marin County Water Conservation & Flood Control District, City of Mill Valley, Mill Valley Streamkeepers, California Department of Fish & Game

SAN RAFAEL, GALLINAS & MILLER CREEK WATERSHEDS

Smith Ranch Road Pond (Zeiger) – Dredge silt out of this pond, create perennial pool, remove invasives, plant natives. Status: conceptual.

Benefits: Flood management, Habitat Restoration, Water Quality

Partners: City of San Rafael, Marin County Department of Public Works

Central San Rafael On-ramp Constriction (Zeiger) – Fix constriction at timber railroad bridge. Status: conceptual.

Benefits: Flood Protection, Habitat enhancement

Potential Partners: City of San Rafael, CALTRANS

Oleander Park Recycled Water Hook-up (Zeiger) – Pipes are already there, all they need is a hook-up. Status: conceptual.

Benefits: Wastewater Treatment, Water Supply

Partners: City of San Rafael, Central Marin Sanitation District

Treated Wastewater Project for toilets at San Quentin (Dow)—Status: conceptual.

Benefits: Water Supply, Wastewater Treatment

Partners: Central Marin Sanitation, Marin Municipal Water District, San Quentin Prison

Mahone Creek Widening & Habitat Enhancement (Zeiger) – widened creek from transit station to Lindaro, landscaped, put in bike path, visible increase in wildlife. Status: complete.

Benefits: Flood Protection, Habitat Enhancement, Recreation, Aesthetics

Partners: City of San Rafael Public Works

Pilot Desalination Plant (Dow) – pilot plant to test feasibility of full-scale plant. Status: in progress, plant operating.

(see next project listing for full-scale plant for benefits and partners)

Marin Desalination Plant (Dow) – 5-10 million gallon/day desalination plant to serve Marin Municipal Water District customers. Effluent would be mixed with treated wastewater from Central Marin Sanitation before being returned to the bay. Status: conceptual.

Benefits: Habitat Enhancement, Water Supply, Wastewater Treatment

Partners: Marin Municipal Water District, Central Marin Sanitation

Treated Wastewater Irrigation Project (Dow) –treated wastewater from Las Gallinas Sanitation used to water median strips. Status: completed/in operation.

Benefits: Wastewater Treatment, Water Supply

Partners: Las Gallinas Sanitation, Marin Municipal Water District, City and County Road Departments

ROSS VALLEY WATERSHED (Corte Madera Creek)

Ross Valley Flood Protection and Watershed Program (Curley, Lewis, Guldman)—a comprehensive program for flood protection and other water issues in Ross Valley. Using a computerized hydraulic model of Corte Madera Creek, the flood control district has identified eight flood "bottlenecks and designed projects to alleviate them. Voters passed a funding measure which will be used to implement a number of these individual, multi-benefit projects. Status: in progress.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Partners: Marin County Flood Control and Water Conservation District, County of Marin Board of Supervisors, U.S. Army Corps of Engineers, Cities of Fairfax, San Anselmo, Ross, Greenbrae

NOVATO CREEK WATERSHED

Bank Stabilization Project with Signage at Creek Crossings (Lattanzio) Status: in progress.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Partners: Novato Sanitary District, Friends of Novato Creek, Marin County Public Works Department

Novato Recycling/Reuse Project (DeGabriele) – treated wastewater used for irrigation. Status: in progress.

Benefits: Habitat Enhancement, Wastewater Treatment, Water Supply

Partners: North Marin Water District, Novato Sanitation, Marin Municipal Water District

Erosion Control Project with private landowner (DeGabriele) – keeping fenced animals away from creek. Status: completed.

Benefits: Habitat Enhancement, Water quality

Partners: Marin Agricultural Land Trust, North Marin Water District, Private landowner

Novato Creek Watershed Survey (DeGabriele) — watershed survey of upper Novato Creek watershed funded by an Administrative Civil Liability (ACL). After survey, North Marin Water District hopes to look at fishery conditions to see that its releases are beneficial and sufficient. Status: in progress.

Benefits: Flood Protection, Habitat Enhancement

Partners: Novato Sanitation, North Marin Water District, Marin County Flood Control and Water Conservation District

Synthetic Turf program for landscaping (DeGabriele) – Status: pilot program.

Benefits: Habitat Enhancement, Water Supply

Partners: North Marin Water District

Wastewater Reuse Project (Dow) – treated wastewater used for golf course irrigation and cooling towers. Status: in progress.

Benefits: Water Supply, Wastewater Treatment

Partners: Central Marin Sanitation, private businesses

Novato Estuary Barrier Removal Project (Lattanzio)--Remove barrier at RR bridge and tidal gate, improve fish and boat passage. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Recreation

Potential Partners: Marin County Public Works, Friends of Novato Creek Civilian Conservation Corps.

Water Release Coordination (Lattanzio) — flush sediments from lower channels, maximize water flow in the whole system. Status: conceptual.

Benefits: Habitat Enhancement, Recreation

Potential Partners: Bel Marin Keyes Homeowners Association, Novato Sanitary District, Friends of Novato Creek, Marin County Department of Public Works

Novato Creek Estuary Tidal Marsh Restoration (Lattanzio)--have lots of opportunity to restore large pieces of tidal wetland. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Recreation

Potential Partners: Friends of Novato Creek, California Department of Fish and Game

North Marin Recycled Water Project (DeGabriele) – provide recycled water to Hamilton Field area. Status: conceptual.

Benefits: Wastewater Treatment, Water Supply

Potential Partners: North Marin Water District, Novato Sanitation
Las Gallinas Valley Sanitary District,
Marin Municipal Water District, U.S. Coast Guard

Recycled Water Project (DeGabriele) – have agreement with Novato Sanitation for recycled water, could partner with Petaluma for recycled water to offset Russian River deliveries to Marin. Status: conceptual.

Benefits: Habitat Enhancement, Wastewater Treatment, Water Supply

Potential Partners: Novato Sanitation, North Marin Water District,
City of Petaluma, Sonoma County Water Agency

No Turf allowed for commercial development (DeGabriele) Status: conceptual.

Benefits: Habitat Enhancement, Water Supply

Potential Partners: North Marin Water District

Water Management Center (DeGabriele) – being created at College of Marin. Water efficiency is goal. Status: in progress

Benefits: Potentially all

Partners: North Marin Water District, Marin Municipal Water District, Marin County Workforce Investment Board, Landscape Contractors Association

PETALUMA RIVER WATERSHED

Baylands project (Arias) — acquiring and managing baylands property. Some will probably be restored to marsh. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Partners: Sonoma County Agricultural Preservation and Sonoma County Agricultural Preservation and Open Space District, Sonoma Land Trust, Resource Land Partners

Ellis Creek Water Recycling Facility (Arias, Yearsley, Rogers)—wastewater treatment in restored marsh, with recreation and public art component. Status: in progress.

Benefits: Habitat Enhancement, Wastewater Treatment, Water Supply, Recreation, Aesthetics

Partners: Sonoma County Agricultural Preservation and Open Space District, Friends of the Petaluma River, Petaluma Sanitation District, Petaluma Riverkeepers, Landscape Artist Patricia Johansen

Petaluma River, Denman Reach Floodplain Restoration, Enhancement, and Trailhead (Rogers) — ten acres upstream from downtown, acquired and restored with flood terracing. Status: complete.

Benefits: Flood Protection, Habitat Enhancement, Recreation

Partners: City of Petaluma Department of Water Resources & Conservation, California Department of Water Resources Urban Stream Restoration Program, California Conservation Corps, Petaluma Riverkeepers

Petaluma River Restoration—Petaluma Blvd to Corona Reach (Rogers) –needs more capacity—clear channel and recontour banks. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Recreation

Partners: City of Petaluma, U.S. Army Corps of Engineers, Riverkeepers

Petaluma River Restoration—near Penngrove (Rogers) –needs more capacity, clear channel and recontour banks. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement

Potential Partners: City of Petaluma, U.S. Army Corps of Engineers, Riverkeepers

Petaluma River Awareness Campaign (Rogers)—public education program. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality,

Potential Partners: Riverkeepers, City of Petaluma

San Antonio Creek (Rogers) – RR bridge over San Antonio Creek where debris builds up—needs clearing (RCD would know specifics). Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement

Potential Partners: Southern Sonoma County Resource Conservation District, City of Petaluma Department of Water Resources, Sonoma County Department of Planning & Public Works

Neighborhood Cleanups (Rogers) – organize cleanups as a way build community as well as improve habitat. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Potential Partners: North Bay Watershed Association, Sonoma County Water Agency, Southern Sonoma County Resource Conservation District, Riverkeepers

Flood Protection, Parcels A & C (Yearsley) – allow Petaluma River to occupy this flood plain area during high flows, maybe create detention ponds as well. Status: conceptual.

Benefits: Flood Protection, Water Supply,

Potential Partners: U.S. Army Corps of Engineers, City of Petaluma, Petaluma Riverkeepers

Restoration of Former Gun Club on Petaluma River (Yearsley) – bought by the Pomo, don't know what the current plans are. Status: conceptual.

Benefits: Flood Protection, Habitat enhancement

Potential Partners: Southern Sonoma County Resource Conservation District, Riverkeepers, California Department of Fish & Game, Sonoma Land Trust, Sonoma County Agricultural Preservation & Open Space District

Day Dairy (Arias) – former dairy, could be allowed to flood. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality, Water Supply

Potential Partners: Sonoma County Agricultural Preservation and Open Space District, Sonoma Land Trust, Southern Sonoma County Resource Conservation District, U.S. Army Corps of Engineers

SONOMA CREEK WATERSHED

Warm Springs Road Habitat Enhancement (Cornwall) – Addition of large woody debris to channel to create scour pools for spawning and rearing habitat. Protected road from washing out from bank erosion. Status: complete.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Partners: Sonoma Ecology Center, Sonoma County Public Works, Civilian Conservation Corps

Nathanson Creek (Cornwall, Barnett) — multi-faceted project with trailway, riparian restoration, education and other components. Status: in progress.

Benefits: Flood Protection, Habitat Enhancement, Water Quality, Recreation

Partners: City of Sonoma, Sonoma Valley Unified School District, Sonoma Ecology Center

Retention Pond in New Development (Kumar) required by City of Sonoma. Status: complete.

Benefits: Flood Protection, Water Quality

Partners: City of Sonoma, Developers

Baylands project (Arias) acquiring and managing baylands property. Some will probably be restored to marsh. See write-up under "Petaluma River."

Sonoma Baylands Project Flood Control Study (Heydon) – Status: in progress.

Benefits: Flood Protection, Habitat Enhancement, Recreation

Partners: U.S. Army Corps if Engineers, Southern Sonoma County Resource Conservation District, Landowners, Sonoma Ecology Center, Sonoma County Agricultural Preservation and Open Space District, California Department of Fish and Game, Watershed Sciences, Sonoma Ecology Center

Flood Easement on Agricultural Lands (Arias) — potential for flood easement. Specific landowner identified. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality, Water Supply

Potential Partners: Sonoma County Agricultural Preservation and Open Space District, Sonoma Land Trust, Sonoma Valley Flood District, Southern Sonoma County Resource Conservation District, Valley of the Moon Water District U.S. Army Corps of Engineers

Highways 12/121 Department of Fish & Game Land Restoration (Arias) – Marsh restoration. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Potential Partners: Sonoma County Agricultural Preservation and Open Space District, Sonoma Land Trust, Resource Land Partners

Hospital Reach of Fryer Creek (Cornwall)—restoration and recreation project. Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality, Recreation, Aesthetics

Potential Partners: Sonoma Valley Hospital, City of Sonoma, Sonoma Ecology Center

Remove Concrete-lined Channels in City (Barnett), specifically Second Street West between Andrieux and MacArthur, and Nathanson around Fourth Street East. Status: conceptual.

Benefits: Flood Protection, Habitat restoration, Aesthetics

Potential Partners: City of Sonoma

NAPA RIVER WATERSHED

Napa-Sonoma Salt Pond Restoration (Sharpe) –flushing old salt ponds with recycled wastewater. Status: conceptual.

Benefits: Habitat restoration, Wastewater Treatment

Partners: Sonoma County Water Agency, Napa Sanitation, Napa County Conservation Division, Napa Resource Conservation District

Floodable Vineyards (Sharpe) – Bale Slough is one example of a formerly disconnected tributary. Now there are vineyards on an alluvial fan. Sediment builds up there, landowners don't like it. Maybe vineyards could be taken out. Status: conceptual.

Benefits: Flood management, Water Quality

Potential Partners: Napa County Farm Bureau, Napa County Resource and Conservation Department

Groundwater Recharge with Treated Wastewater (Sharpe) – put treated wastewater into the ground in the east county where groundwater is deficient. Status: conceptual.

Benefits: Wastewater Treatment, Water Supply

Partners: Napa Sanitation, Landowners, Napa County Resource Conservation District, Local Water Districts

Living River Project (Rippey, Sharpe) – major multi-benefit project. Status: in progress, many parts complete.

Benefits: Flood Protection, Habitat Enhancement, Water Quality, Recreation, Aesthetics

Partners: U.S. Army Corps of Engineers, Friends of the Napa River, Napa County, City of Napa, Napa County Farm Bureau, Private landowners, Better Business Bureau, California Department of Fish & Game, Napa County Supervisors, Coastal Conservancy, Napa Valley Economic Development Corporation, Napa Valley Visitors Bureau, Sierra Club, Napa Valley Chamber of Commerce, Napa Resource Conservation District

Rutherford Dust Project (Sharpe) – four or five mile reach, have done an assessment and conceptual design. Status: in final design phase.

Benefits: Flood Protection, Habitat enhancement, Water Quality

Partners: Napa Resource Conservation District, Landowners

Yountville Reach (Sharpe) – below Rutherford Dust Project. Integrated plan for eight or nine miles of river. Very similar to Rutherford Dust Project. Status: conceptual.

Benefits: Flood Protection, Habitat enhancement, Water Quality

Potential Partners: Landowners, Napa Resource Conservation District California Land Stewardship Institute

Carneros Creek Restoration Plan (Sharpe) – upstream reach from Hwy 12/121, lay back banks to give creek more room to move, (lots of recent bank loss). Status: conceptual.

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Potential Partners: Napa Resource Conservation District, Landowners

Fish Friendly Farming Certification Program (Sharpe) – growers take workshops, get some technical assistance in developing a farm plan. Run by California Land Stewardship Institute. Status: in progress.

Benefits: Habitat Enhancement, Water Quality

Partners: Agricultural Landowners, California Land Stewardship Institute

APPENDIX D

GENERAL MULTI-BENEFIT PROJECTS
(many have already been implemented in some watersheds
and could be implemented anywhere)

Note: **Bolded names** in parenthesis are example interviewees who mentioned the idea in detail, but is not meant to be an exhaustive listing

Low-Impact-Developments (Wolff) – use of permeable paving and other infrastructure to create several benefits.

Benefits: Flood Protection, Habitat Enhancement, Water Supply, Water Quality

Potential Partners: Developers, Flood Districts, Water Suppliers,

Indoor Water Conservation (Wolff)

Partners: Water suppliers, Wastewater, Energy Suppliers

Benefits: Habitat Enhancement, Water Supply, Wastewater Treatment

Permeable Pavement Incentives (Bikle, Cornwall)

Benefits: Flood Protection, Habitat Enhancement, Water Supply, Water Quality

Potential Partners: Water Suppliers, Flood Districts

Identify and Protect Recharge Areas (Cornwall) — particularly in Sonoma and Napa Valleys which rely on wells for a significant percentage of their water use

Benefits: Flood Protection, Habitat Enhancement, Water Supply, Water Quality

Potential Partners: Water Suppliers, Watershed Groups, Flood Districts, Landowners

Biological and Geomorphic Surveys and Monitoring (Curley/Lewis, Bikle) — as a starting point for watershed-wide approach, and to gauge changes and effects over time

Benefits: Flood Protection, Habitat Enhancement, Water Quality,

Potential Partners: Watershed Groups, City and County Public Works,
California Department of Fish and Game

Yearly Workshop Conference/Stakeholders Meeting (Lattanzio, Cornwall) —first half regional successes/presentations etc. second half local entities meet, brainstorm & plan

Benefits: potentially all

Potential Partners: all stakeholders

Water Recycling (Bikle, Lattanzio)

Benefits: Habitat Enhancement, Water Supply, Wastewater Treatment

Potential Partners: Sanitation Districts, Water Suppliers, Agricultural and other Landowners

Outdoor Water Conservation (DeGabriele, Lattanzio, Bikle) –- use of tiered rate system depending on usage

Benefits: Habitat Enhancement, Water Supply

Potential Partners: Water Suppliers, Landscaping Businesses, Landowners,

Streamside Landowner Projects (Cornwall) —such as bio-engineering for erosion control

Benefits: Flood Protection, Habitat Enhancement, Water Quality

Potential Partners: Landowners, Watershed Groups, Civilian Conservation Corps, County or City Public Works Departments,

Riparian Weed Removal (Cornwall) — such as Arundo

Benefits: Flood Protection, Habitat Enhancement

Potential Partners: Watershed Groups, California Department of Fish and Game

Develop and Enhance Watershed Associations (Wolff)

Benefits: potentially all

Potential Partners: all stakeholders

APPENDIX E

OBSTACLES to INTEGRATED WATER MANAGEMENT

NO ONE IS THINKING ABOUT THE BIG PICTURE OR THE LONG VIEW, NO ONE IS TAKING THE LEAD: **15**

No one has put the task of multi-benefit projects before them
No one is taking the lead (convenient not to act)
No one volunteers to administer these projects
No one has overview of what everyone is doing
Lack of project managers for multi-benefit projects
Need watershed plan before effective coordination
& integration can happen—a look at the big picture
Managers trained to think about what's good for the institution,
not necessarily the big picture
Everyday energy goes elsewhere, defined by mandate
Agencies present pet projects as multi-benefit, fail to create
truly integrated projects
Lack of watershed-wide planning
Institutional memory and commitment is limited
Groundwater reform regulation may take longer than
a lifetime—many people don't have fortitude for it
Resource Conservation District records not in electronic form,
limits institutional memory
Agencies limited by their mandates
Open Space District is set up to acquire land but not to manage it,
for this they need partners,
Open Space District is not a driver on multi-benefit projects
Utility agencies don't see environmental benefits
Agency folks have different perspective than landowners
don't take into account feelings of connection to a place

LACK OF FUNDING, STAFF **12**

Lack of funding for fundamental projects
Lack of consistent funding
Scope of integrated projects bigger = higher cost
Hard to get funding
Who pays for a regional project?
Fee too high to join NBWA
Small suppliers too small for big projects
Price of land (referring to recharge areas)
Contacting landowners is very time-consuming
Limited staff time

LACK OF COMMUNICATION, POOR COORDINATION WITHIN AND BETWEEN AGENCIES, AND BETWEEN AGENCIES, NGOS AND THE PUBLIC **8**

Big government agencies not listening to public, not good collaborators
Bureaucratic non-communication
Tough to get people to talk about coordination
Agencies need to talk more with farmers
Some departments and personalities
don't want to work together
Has not worked, has no partnerships with ngos
Can be difficult coordinating agencies with different missions
Too many meetings, or time wasted on meetings on issues not of concern:
East Marin has different issues than the rest of the north bay
Too much time is spent at meetings on issues that don't concern
East Marin

BENEFITS OF MULTIPLE BENEFIT PROJECTS UNCLEAR, DIFFICULT TO QUANTIFY **7**

Benefit of groundwater recharge is nebulous
Impossible to show cause and effect with groundwater—
scientific method not easily applied
Groundwater recharge projects don't have pay off
Hard to show benefit to individual agency or public
"Can't get my agency to spend money on benefits that
don't directly benefit my agency."
Small players don't see benefit of working with bigger agencies

LACK OF REGULATION OR ENFORCEMENT, CONFUSING JURISDICTION DAUNTING PERMIT PROCESS **6**

Lack of enforcement or follow-through on local government's
own regulations.
Unpermitted water diversions
Too little regulation of groundwater or diversions
Enforcement plus engineering too much for one agency
Many different regulatory bodies may cover your region
(some projects involve Bay Area and Central Valley)
Time required for permitting process
Landowners frustrated by time needed for permitting process
and the fact that regulations can change in the middle of the
process. Their willingness may dwindle
Mixed messages very frustrating for agriculture
Perception that government maintains creeks
Belief that statewide bond measures have problem covered
Lack of public awareness
Nobody knows what permits are needed

LACK OF QUANTITATIVE KNOWLEDGE ABOUT BASIC QUESTIONS **5**

(how much does impervious surfaces increase runoff?)
(where are the recharge areas?
(need more data and analysis of existing data)
Lack of current data (adds 50% to cost of planning)
Determining your baseline
Need for data on impermeable surfaces
No understanding of San Pablo Bay—we don't know anything about the fish in SP Bay ("blind spot")
Lack of good info from water testing labs
Bias against warning signals from non-indicator species like bass

PRIVATE PROPERTY ISSUES **5**

Perception of private property rights
Private property—problems are hidden, people do what they want through ignorance or because they can (particularly with respect to groundwater & diversions)
Convincing landowners that giving up a little of their backyard is to their benefit in the long run
Hard to track private projects—five towns plus county
Creeks mostly on private land

CHALLENGES WITH RECYCLED WATER **5**

Ag community is resistant to recycling—may imperil their water rights and could diminish quality of product (grapes)
No big potential users for recycled water in Sonoma Valley most customers are residential
Maximum generation of recycled water is when you need it the least, in winter
Standards for use of recycled water a barrier
Small Sanitary Districts have limited staff resources
Manpower
Contacting landowners is very time-consuming
Grants are time-consuming
Long-term maintenance for projects that need it

LACK OF POLITICAL WILL FOR WATER REGULATION, MANDATES **4**

Afraid to mess with dairy farmers
Local government support weak—want to make sure they
don't lose their constituency
Generating public enthusiasm

OUTDATED MINDSETS **3**

Some old school folks at some Public Works departments
Conservative mindset
Old school environmentalists
(block flood projects, concerned about any work in creeks)

MANDATE TOO BROAD **1**

Engineering plus enforcement too much for one agency

APPENDIX F

WHAT WORKS, OR COULD WORK, TO PROMOTE
INTEGRATED WATER MANAGEMENT

Interviewees are identified by the following abbreviations:

C = Caitlin Cornwall	JD = Jason Dow	DY = David Yearsley
L = Lewis/Curley	G = Sandra Guldman	SZ = Steve Zeiger
SL = Sue Lattanzio	H = Tim Hampton	GW = Gary Wolff
K = Krishna Kumar	PH = Paul Helliker	LB = Larry Barnett
A = Misty Arias	SH = Susan Heydon	KR = Karen Rippey
B = Betsy Bikle	BK = Bill Keene	LS = Leigh Sharpe
D = Chris DeGabriele	AR = Andy Rogers	

APPROACH

Take a three-pronged approach by forming a: Technical Work Group Financial Work Group Public Outreach to build support, involve politicians	L L, KR
Napa had five committees Habitat Aesthetics Environmental Economic Urban Design Each committee determined the minimum they would accept (ex. aesthetics said "no riprap above the water line") Committees worked together to determine how they could meet all their minimum parameters	KR
Public meetings highly visual () (Phil Williams provided very visual 3-D hydro-modeling that allowed people to visualize the data)	KR
Get everyone involved in supporting the sales tax initiative (ag, business, etc.)	KR
Sales tax passed because it had an end date, every community benefited	KR
Bayland purchases calculated into project cost	KR
If eminent domain is used it will work only if state and feds are behind project not just local entities	KR
Get politicians involved (supervisors)	KR

Politicians define priorities, not agencies (helps their career to do 'shiny' projects)	BK
Be solution oriented	L
Assist permitting process (Public Works), give landowners the tools they need to do it right. Geomorphologists and engineers do creek surveys, identify problem areas, get feedback from regulators, then go to homeowner and say "this solution will probably pass muster."	L
Hire good consultants who have worked elsewhere and know the process potential pitfalls, and routes to success.	L
Make the North Bay into a more powerful lobby to get funds earmarked	L
Make mitigation projects more multi-benefit, apply to whole watersheds	SL
Long-term monitoring necessary for some project types (conservation easements etc.)	A
Use third-party environmental compliance monitor	G
Get maintenance agreements in writing	SZ
Long time frame (10 years for Napa to pass sales tax)	KR
Need for patience	G
Public likes action (but need for patience)	G
Look for a project to rally around, little projects lead to bigger ones	AR
Work within own community, feed local projects into regional plan	LS
Combine channel restoration with road maintenance	LB
Create incentives—groundwater recharge, conservation	LB
Combine restoration, groundwater, flood reduction	BK
Need "new form of governance" to make more multi-benefit projects happen	BK
Base outreach on what barriers people talk about	BK
Identify the kinds of programs that are most workable between certain combinations of players	BK

BMPs are cheaper but take longer	SH
Agencies need to coordinate messages/regulations to farmers	SH
Ag land good for recharge	SH
Is there a reasonable alternative to meetings?	SH
Build off of willing landowner interest—most people want to do "right thing"	SH
Put users first—landowners, water users etc. these are people making day to day decisions (SH really emphasized this)	SH
Need watershed plan before effective coordination and integration can happen	SL
Look for opportunities to solve multiple problems beyond your own Just ask: "How do we solve our problems with multi-benefit projects?"	PH
We've articulated goals, now get more analytical about solutions	PH
Can we reduce greenhouse emissions with our projects?	PH
Schools are good places for projects	G
Ross Valley project succeeding because it's addressing flooding and habitat	G
Combine flood protection, habitat enhancement, and fish passage barrier removal	G
Take lead when you see the greater benefit, hire more staff to help do this	JD
Projects should be clearly multi-benefit	LS
Integrated projects need to have merit, projects that would be done anyway	D
Demand reduction raises all boats	D

CONTACT & COMMUNICATION

More contact and communication among water players (watershed association, Community Coalition in Napa) (Professional help to foster communication between groups) (stakeholder meetings several times a year) (Dec 2005 flood provided an extra impetus—made people pay attention) (OSD will attend watershed association meetings if requested) (LS not crazy about yearly networking meeting) (especially with farmers—SH) (meet folks face to face--SH) (networking meeting more than once a year—JD)	C, L, SL, B, A, KR, SZ, LS, GW,DY, SH PH, H, G, JD
Engage neighbors and reaches Bring people together over problems (failure of erosion control structures)	G
Get private landowners on boards	G
Reinforce message of moving forward, everyone is a stakeholder	JD
Help regulators, give them suggestions they can adopt	JD
Make it less expensive to join NBWA	K
Really scoping your stakeholders, address all of them	L
Make a big chart of all the players in your watershed	DY
Public workshops for stakeholders to talk about projects	JD
Bring in elected officials	C, L
Have them speak about the issue publicly	L
Meet with politicians before stakeholder meetings	L
Politicos and public look at data together, communicate community will to regulators	SH
Provide landowners/developers with information	B
Consult with community (Napa came up with “Living River” idea)	C, KR
Public has lots of good ideas	JD

Be transparent about the process	L	
Consensus building requires good listeners (Dave Dixon from Napa County was “a pro”)	KR	
Spend more time at NBWA meetings talking about what’s on plate of individual agencies—could spark ideas for cooperation	D	

RESOURCES

Agencies provide resources, ngos/RCDs the creativity & community connection	C	
Realization that it would take the whole watershed to get enough money to do what needs to be done	L	
Ngos partnering with other ngos	SL	
Leveraging the resources of watershed groups	SL	
Establish a user-fee based on impervious surfaces by a mail-in vote	L	
Look for projects already being considered and piggyback multi-benefit projects on them (Lagunitas Bridge replacement)	L	
Public Works is more flexible than Army Corps	L	
SLT more nimble than OSD (seems to be a continuum from more flexibility/less resources to less flexibility/more resources)	A	
OSD has matching grant program for cities or non-profits to protect land ($$ can go to restoration, potential use for fish passage removal/flood reduction)	A	
Bel Marin Keyes residents see clear advantage to creating a bond to address some of their water issues	SL	
Open Space District set up to acquire land	A	
Make water a more valuable resource. Water is still cheap— Sonoma got no complaints about a 45% increase in rates over five years		LB
Create an assessment district	BK	
Communities willing to tax themselves for flood control	H	

Sanitation District should raise rates to fix leaky sewers. Habitat and water quality benefits	G
Economy of scope should reduce costs	G
Find best fit funding source for need: state grants, state revolving funds, low interest loans, issue debt with coordinating player	JD
Fund local projects locally using State Revolving fund (not free money, projects will probably be better)	D
Need to hear what funders want, not what they don't (IRWMP)	D

LEADERSHIP/DECISION-MAKING/KNOWLEDGE BASE

Endorse the Ahwanee Water Principles	C
Broadening the knowledge base	
Do biological and geomorphic surveys as starting points	L
Gather and analyze existing data, create baseline	SL
Need data over time	G
Have studies in place first	SH
Monitoring of wells, diversions, salmonids	B
Develop quantitative targets for Bay Area	BK
NGOs/RCDs provide long-range vision and identify opportunities for multi-benefit project	B
Give landowners tools to steward their land	A
Nothing takes the place of on-the-ground data	LS
Politicos and public look at data together, communicate community will to regulators	SH
Get RCD records into digital form	SH
Inventories in single, effective format that players can input. Accessible to all. Designed and overseen by organization with capacity to do it	G

Ability to know when you have enough data to act	G
Agencies educating decision-makers about good ideas used elsewhere	D

WHAT MOTIVATES OR BUILDS AGENCY/PUBLIC SUPPORT?

Flooding	A, KR, L, LB, K
Groundwater Recharge Area Preservation	A
It takes a crisis to wake people up	LB
Drought, Water Supply	LB, K
Public Access component	A, AR
Lots of public support for water projects (according to OSD poll)	A
Citizen interest can be tapped	SL
"Everyone is interested in water quality"	DY
Public awareness/education campaign	AR
Educate regulatory agencies and public, point out benefits	JD
Community clean-ups good way for neighborhoods to connect with the river	AR
Really show cost benefit for multi-objective projects	LS
Cost savings demonstration of lumping smaller projects into one larger project (save on CEQA and permitting "for sure")	LS
Cluster coordinated single-benefit projects	BK
Convince small players (like VOMWD) that working with bigger agencies saves them money	GW
Demonstrate benefit by having "good engineers do cost estimates for projects done separately and done together. This shows the payoff."	GW

Take all benefits into account—will help with funding	H
Focus Watershed Council/Coalition talk on payback projects—look for biggest bang for your buck”	GW
Mandates from the Water Board	LB
Mandatory groundwater regulation may be required	LB
Streamline permit process and timeline (particularly for farmers) regulations change in the time it takes to get funding	SH
Incentives should reflect full benefits (ex:.low flow toilet helps supply and wastewater treatment)	PH
Endangered species	H
Address mindsets about composting toilets, prohibiting lawns, outdoor water use, synthetic turf	D