

IMPLEMENTATION



Photo by Greg Filbrandt

6. IMPLEMENTATION

STATE IRWM REQUIREMENTS: G. Implementation. Identify specific actions, projects and studies, ongoing or planned, by which the Plan will be implemented. Identify the agency(ies) responsible for project implementation and clearly identify linkages or interdependence between projects. Demonstrate economic and technical feasibility on a programmatic level. Identify the current status of each element of the Plan, such as existing infrastructure, feasibility, pilot or demonstration project, design completed, etc. Include timelines for all active or planned projects and identify the institutional structure that will ensure Plan implementation.

6-1 IMPLEMENTATION PROJECTS & ACTIONS

PROJECT SUMMARIES AND STATUS



As indicated in Chapter 5, 74 project recommendations were reviewed and evaluated. These projects represent a range of project types (i.e., restoration, implementation of BMPs, facility construction), as summarized in Table 5-3 in Chapter 5. Table 6-1 of this chapter summarizes the specific type of projects that are proposed to achieve the ICWMP's stated objectives related to water quality, ecosystem restoration and habitat improvement, water supply reliability, and stormwater and flood management. Table 6-2

at the end of this chapter provides a brief project summary and identifies the implementing agency, project status, and timeline. The full project summaries are included in Appendix G.

OTHER PLANS, RECOMMENDATIONS & ONGOING PROGRAMS

Over the course of plan preparation, the TBWC has solicited project descriptions from its members and other stakeholders in the region. The solicitation process for projects suitable for Prop 50 funding was closed in March of 2007, to enable the projects to be ranked for the purposes of plan finalization and public review. However, the plan process has caused numerous stakeholders to reevaluate the method and process by which they identify possible implementation projects.

A collaborative and joint planning approach has gained momentum within the Tomales Bay region among the agencies and organizations concerned with resource and watershed management. This is reflected in the fact that projects continue to be submitted to the Council. Additionally, as a result of the ongoing ICWMP project review and subcommittee activities, a number of stakeholders and project proponents have begun the process of developing multi-stakeholder and/or multi-objective projects in addition to those already proposed in greater detail. Some of these projects are extremely conceptual in nature, don't have a clear proponent, or require completion of studies already underway before they can be finalized into a project proposal.

To accommodate this new energy and to ensure that conceptual, emerging or "fledgling" projects do not fall by the wayside, the TBWC has instituted a process for receiving, processing and tracking new projects developed with an eye toward comprehensive plan implementation. The Council has developed two forms for use in identifying projects within the watershed. The first is a "long form" application that provides a variety of details about the project and assumes that a project is generally ready to proceed. In this context, "ready to proceed" means that the project has an identified proponent/applicant, has been approved by its Board, has a detailed budget and implementation schedule, has initiated permit approval, has an identified match or funding source, and is ready for implementation with a minimum of delay.

The second is a "short form" that has been developed to enable project concepts, preliminary designs or evolving partnerships to be brought forward for inclusion in the plan. The intent of this short form process is to ensure that the full Council and all stakeholders have a constantly updated understanding of not only the emerging technical issues, but also the emerging partnerships and collaborations within the region. The assumption is that many of these projects will develop over time into formal projects that can be ranked and prioritized. Tracking these less defined projects allows for watershed stakeholders to merge projects, refine ongoing projects to accommodate additional data reporting functions and generally ensure holistic thinking throughout the region. The multi-stakeholder, multi-objective projects that are the stated priority of the group will be facilitated by the "early warning" on emerging project concepts and ideas.

The initial group of short-form projects is included in Appendix H. These "Proposed Project Concepts" could be developed in greater detail in the future—especially in response to, or to complement, the measured outcomes of the implemented projects. The ICWMP includes these concepts in order to comprehensively encompass all the previous planning efforts for all of the critical coastal areas, and to provide guidance for future modification of recommendations and project proposals. These projects will enable the Project Review Subcommittee and the Plan Amendment Subcommittee to initiate and test their process for project development.

In addition to the projects identified in the ICWMP and other potential future projects noted above, there are other known project and/or program recommendations that have been included in other regional plans, but have not been submitted as projects under this process. These recommendations also are included in Appendix H. Appendix H also includes a list of known/previously identified data gaps that could serve as future project concepts, as well as those issues/concerns identified in Chapter 3 for further review in the future.

**TABLE 6-1
SUMMARY OF SUBMITTED PROJECT DESCRIPTIONS**

Project Type	Project #
WATER SUPPLY / RELIABILITY	
▪ Water Supply Projects	1, 3, 8, 14
▪ Recycled Water Projects	5, 57, 58
▪ Water Treatment Plant Upgrades	2, 50, 52, 51, 65
▪ Water Storage & Infrastructure Improvements	51, 53, 54, 55, 56, 66, 69
▪ Water System Security	13, 18, 60
▪ Water Conservation and Planning	16, 67, 68
WATER QUALITY IMPROVEMENT	
▪ Road and Trail Improvement & Management Projects	4, 11, 12, 17, 35, 37, 70
▪ Bank Repairs & Erosion Control	46, 47
▪ Ag Land BMPs	22, 42, 44, 61
▪ Onsite Wastewater Disposal System Replacement or Upgrades	36, 38, 39, 59
▪ Boat Vessel Management	33, 34
▪ Grazing BMPs	64
▪ Mercury Monitoring Project	7
▪ ASBS - Multiple Measures	31,32
ECOSYSTEM RESTORATION / HABITAT IMPROVEMENT	
▪ Wetland Restoration	30, 40
▪ Stream Bank / Channel Enhancement	23, 46
▪ Fish Passage Barrier Removal	24, 25, 26, 27
▪ Salmonid Monitoring	48
▪ Riparian Revegetation	9, 45, 46
▪ Invasive Species Removal	21, 73
▪ Coastal Prairie Improvement Project	62
STORMWATER / FLOOD MANAGEMENT	
▪ Stormwater Capture	10, 49
▪ Stormwater/Flood Management	43
OTHERS	
▪ Recreational Access Improvements Near Creeks	19, 20
▪ Watershed Planning	15, 29, 41
▪ Ag Land Renewable Energy Project	62
▪ Ag Land Conservation Easement Acquisition	72

6-2 IMPLEMENTING AGENCIES AND RESPONSIBILITIES

The Tomales Bay Watershed Council (including the member water supply agencies) will coordinate the implementation of the ICWMP. If this changes in the future, the ICWMP would be amended to reflect this change. Although the TBWC will coordinate implementation of the Plan, all adopting agencies will be part of the Plan implementation process. Decisions such as selection of projects for inclusion in funding applications, Plan updates/modifications, etc., will be a collaborative effort of the agencies and organizations through a clearly defined process.

The TBWC, now 7 years old, has successfully developed the Stewardship Plan, and has been actively involved in the implementation of regional projects. Through the ICWMP process, water supply has been added, and the planning area has expanded in response to the region's concerns. All water agencies providing water service in the Tomales Bay region were on the TBWC. The Tomales Bay region has successfully implemented projects with diverse stakeholders. There is a history of project implementation by a number of stakeholders in the region that preceded the formation of the TBWC. The TBWC brought agencies and organizations together to promote collaboration, which would continue to meet quarterly.

Each project proponent will be responsible for implementation of individual projects and successfully meeting all environmental permitting and compliance requirements (see Table 6-2 for the list of agencies responsible for project implementation). All agencies, organizations and stakeholders are moving forward with their own missions and objectives, and that will continue. While the TBWC is the entity responsible for coordination of ICWMP implementation and working with agencies to review how plan objectives are being met, the TBWC would not necessarily be the administrator of specific grants. However, the TBWC is the focal point for sharing information and project progress and assisting with development of new projects as a result of outcome of ongoing project and plan review and assessment. The TBWC would actively pursue project proposals, and continue to be a forum for coordination, including coordinating joint proposals.

The TBWC will establish a subcommittee that will meet periodically (i.e., quarterly or as needed) to assess the status of project implementation and work with proponent project teams to ensure timely project implementation. The subcommittee will include representatives from each of the Plan's adopting entities. As described in Chapter 8, project performance data will be brought to the TBWC and subcommittee for review to determine the level of contribution toward achieving ICWMP objectives and overall plan implementation progress. The TAC and subcommittee will work with the TBWC during an annual ICWMP status review to ensure that specific projects ready for implementation are being identified and prioritized.

The TBWC has developed a phased approach to Plan implementation that includes regular updates of the Plan through 2010, with semi-annual updates thereafter. Each year, in October (beginning with October 2007), the Plan will be reevaluated by a standing subcommittee – the Plan Amendment Subcommittee (PAS). The PAS will follow the following procedure:

1. Evaluate the results of any ongoing studies, monitoring efforts and data collection activities.
 - a. Ensure that new or updated data is entered into the appropriate databases.
 - b. Refine area maps which reflect resource inventories, if needed.

2. Review and, if necessary, revise objectives and management priorities to ensure that the evolution of knowledge about conditions in the watershed (or derived from external factors such as global warming) are reflected.
3. Review projects developed by watershed stakeholders and coordinate with the Project Review Subcommittee to re-rank the overall project list as necessary.
4. Identify and facilitate the coordination of multi-stakeholder and multi-objective projects for the coming year, in coordination with the Project Review Subcommittee.
5. Revise the Plan document as necessary to respond to evolving conditions within the watershed, emerging consensus topics and requirements of new funding opportunities.

6-3 LINKAGES BETWEEN PROJECTS

Within the Tomales Bay planning areas are a diversity of local, state and federal agencies, as well as non-governmental organizations. An attempt was made to ensure that the diverse missions of these organizations were reflected in the project mix; more important, an attempt was made to develop purposeful and intentional partnerships across these agencies and organizations to ensure that conceptual and design linkage opportunities were identified as early in the process as possible.

The TAC explored the concept of linkages from a variety of perspectives. There are several ways in which the ICWMP projects are interconnected or linked:

- Projects that address the same objective,
- Projects that contribute to improvements in a specific geographic location (i.e., the same tributary), and
- Projects whose combined implementation results in addressing multiple objectives.

Projects that address the same objective category are summarized in Table 6-1. Projects that seek to reduce pathogen pollutant sources into Tomales Bay (#36, 38, 39, 59) are linked in the sense that they would all be contributing to achievement of the Pathogen TMDL adopted for the area, and at least one project (#7) would be implementing monitoring recommendations of the Mercury TMDL.



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Table 6-1 also shows the linkages between similar types of projects. One example of project linkage between similar projects is a group of five projects that address implementation of agricultural / grazing BMPs (#22, 42, 44, 61, 64). These projects complement each other and collectively expand the area of watershed coverage in which these projects could be implemented. Another example is the linkage between the BCPUD (Project #52) and the IPUD (Project #65), as they are working collaboratively to identify the most appropriate water treatment technology to reduce chlorine disinfection byproducts from their similar treatment systems.

Projects that are geographically linked are those projects that will directly benefit an individual tributary or specific area, and cumulatively result in a net measurable improvement in the targeted place. Additionally, the idea of maximizing benefits in multiple tributaries to generate a measurable benefit to the larger system also was considered. Within this context, specific geographical linkages between projects were identified that would result in water quality and fish habitat improvement as summarized below.

- Lagunitas Creek: Two road/trail sediment reduction projects (#11, 12) and one riparian revegetation / fish enhancement project (#9) are proposed on Lagunitas Creek. There are seven additional sediment reduction projects on tributaries to Lagunitas Creek: on Devil's Creek (#37), Olema Creek (#17, 35), and San Geronimo Creek (#44, 46, 47, 70). Taken together, these projects are linked, in that all of them address water quality improvement via reduction of sediment. This in turn helps improve fishery habitat. These projects also are linked to several fish barrier removal projects on San Geronimo Creek, which are described below.
- San Geronimo Creek: A number of projects proposed to reduce sediment and improve water quality in San Geronimo Creek (#44, 46, 47, 70) are linked to three other projects that would result in removal of barriers for fish migration and other stream improvements to enhance habitat (#23, 24, 26). The value of these improvements is linked to another ongoing project (#48) that monitors salmonid spawning trends and smolt outmigration in San Geronimo Creek as well as other tributaries in the Lagunitas Creek watershed.

One of the fish barrier removal projects (#26) is directly linked with other similar projects on Woodacre Creek, as it is located at the confluence San Geronimo and Woodacre Creeks, a high priority site as both are important tributaries for spawning and rearing of coho salmon. The project will restore migratory access through an existing barrier, providing access to critical habitat for spawning and rearing coho salmon and steelhead. The project is linked to a project that would remove an upstream barrier (#23), and is thus integrated with the County of Marin Fish Passage Program. The project also will stabilize a severely eroding streambank, which will decrease sedimentation into San Geronimo and Lagunitas Creeks (listed as impaired under 303(d) for sediment).

- Woodacre Creek: Two fish barrier removal projects (#25, 27) would link to provide greater benefits for habitat improvement. Additional projects on Woodacre Creek include:
 - SPAWN outmigration monitoring (48)
 - Develop sediment reduction budgets and projects (44)
 - Bank stabilization to reduce sediments (46)
 - Road improvements to reduce sediment on MCOSED roads (70)
 - Dickson weir project (23)
- Olema Creek: Two projects propose trail improvements (#35) and access road improvements (#17) within the same area which will provide added benefits related to sediment reduction in this area.

- Tomales Bay: Four projects to improve onsite wastewater disposal systems (#36, 38, 39, 59) would be linked as projects serving to reduce pathogens into Tomales Bay. Additionally, two proposed wetland restoration projects (#30, 40) would be linked to the planned Giacomini Wetlands Restoration Project and would expand a wildlife refuge corridor. The Silver Hills Restoration project would restore a creek outlet to Olema Marsh (#30) and would be geographically linked to the planned Giacomini Wetlands Restoration Project.

Table 6-3 summarizes how the short-term priority projects contribute to ICWMP objectives and management strategies. It further illustrates the multiple benefits of combined projects. Not only do the individual projects meet multiple objectives, but collectively, the short-term projects contribute to fourteen selected management strategies and to each of the ICWMP's key goals. Although the short-term projects represent a range of project types, they are collectively linked in that each project contributes to water quality and ecosystem/habitat improvement, two of the ICWMP's key goal and objective categories.

6-4 ECONOMIC AND TECHNICAL FEASIBILITY

The Tomales Bay ICWMP consists of projects, programs and planning activities that have been delivered by the stakeholder proponents. The costs and economic feasibility have been taken into consideration by these agencies and organizations as part of their project recommendation process. Each project proponent was required to determine the technical feasibility of their project prior to submittal. All of the proponents have worked with similar projects and/or project-specific feasibility and design studies which have identified costs and economic feasibility. Economic feasibility of individual projects was determined on a variety of factors including internal agency cost estimates, development of individual project budgets, agency and stakeholder master plans and background documentation and evaluation of projected costs by the project review committee. Individually the projects have demonstrated economic feasibility in that they have identified costs and budget, and are feasible to implement if funds are available. On a program level, economic feasibility focused on projections contained in agency planning documents, availability of selected technologies in the marketplace, cost estimates and budgets contained in individual project proposals and other similar factors.

A majority of the proposed projects and programs within the ICWMP are related to improvements to existing facilities and improvement or restoration of habitat areas. Except for major facilities, such as the MMWD desalination project (a regional project undergoing its own analyses), none of the projects within the ICWMP represent new or unusual technologies that would be deemed infeasible or cost-prohibitive or are designed as pilot and demonstration efforts to test feasibility and cost effectiveness of techniques that could be applied region wide.

The projects identified in the ICWMP have a total cost of \$40,712,100; the short-term priorities identified in Chapter 5 represent approximately \$9,500,000 of this total amount. The ICWMP reflects the long-term projects currently known throughout the region. However, at this time it is acknowledged that there are more projects proposed than can be implemented with currently available funding. Not all identified projects proposed have been proposed for funding at this time. While there is a likelihood that projects included in the Plan are or will be economically feasible, it

may take time for government agencies and non-governmental agencies to seek and receive funding for project implementation. In this regard and from the regional perspective, the ICWMP may be economically difficult to implement in its entirety, which is why a prioritization process and phased approach has been developed by project proponents and TBWC.

From a regional perspective, the total amount and magnitude of costs challenges the region in funding all projects. The ICWMP can assist in ongoing refinement of the overall economic need of the region to implement projects, and project proponents will try to fund projects that directly address regional priorities and seek funding of highest priority projects with greatest potential for benefits. Reprioritization of projects will bring new projects forward in response. The region has a history of receiving public and private grants to implement a variety of projects similar to those included in the ICWMP. Additional funding sources will continue to be sought regardless of whether a project is being funded by state agencies.

The planning process to date has been a collaborative effort, and in the future, given the nature of partnerships that currently exist, further streamlining, collaboration and focus efforts will occur that could reduce total project costs. For example, a greater economy of scale may be achieved by grouping projects. Project proponents may be working together with more collaborating and strategizing about how projects can be organized.

6-5 TIMELINE FOR IMPLEMENTATION

It is the intent that the Tomales Bay ICWMP be a “living document” with annual updates to coordinate planning in the Tomales Bay region over the next 20 years; however, regular agency updates or new studies or information—i.e., new County General Plan information or TMDL studies—could change the life of the plan and require substantive update and reevaluation. Short-term priority projects identified in Chapter 5 will be considered initially. As other projects are developed, priorities will be revisited. Table 6-2 summarizes specific project timelines as they are currently known, although some have not been fully developed at this time.

TABLE 6-2: SUBMITTED PROJECT DESCRIPTION & STATUS SUMMARY

	Implement-ing Agency	Project	Description	Status	Schedule	
					Start	Complete
	WATER SUPPLY / RELIABILITY / SAFE DRINKING WATER					
1	NMWD	Gallagher Well & Pipeline	Develop additional wells near existing emergency well and construct pipeline to connect to existing treatment plant.	Preliminary design report complete.	Within one year of funding.	
2	NMWD	Point Reyes Treatment Plant Improvements	Water treatment plant upgrades and filter replacement.	Design study complete.	Within one year of funding.	
3	MMWD	MMWD Bay Water Desalination Plant	Construction of desalination plant.	EIR in progress.		2010-2012
5	MMWD	Peacock Gap Recycled Water Extension	Increase production at existing plant and construct new pipeline to produce and deliver recycled water to a new user (Peacock Gap Golf Course).	Staff studies have been prepared, and costs and specs for several designs have been developed.	To Be Determined	
8	MMWD	Groundwater Recovery Feasibility Study - Phase 2	Feasibility study to explore potential for recapturing long-term infiltration loss from reservoirs to increase available water supply.	Phase 1 study complete.	To Be Determined	
13	MMWD	Water System Security and Emergency Preparedness	Implementation of identified measures at prioritized locations for added security at MMWD facilities.	Vulnerability Assessment complete.	To Be Determined	
14	MMWD	Soulajule Reservoir Supply to Stafford Lake WTP	Construction of pipeline from Soulajule Reservoir to NMWD's Stafford Lake water treatment plant to allow water from the reservoir to be pumped to the treatment plant.	Engineering report needs to be updated.	To Be Determined	
15	MMWD	Water Conservation: Sustainable Wildland-Urban Landscape Interface	Development of public outreach components to promote conversion to native vegetation.		To Be Determined	
16	MMWD	Water Conservation: Marin County Satellite Imagery Project	Study to target landscape areas that can be converted to water-conserving landscaping and project outreach component to implement.		To Be Determined	
18	MMWD	Fencing Around Water Supply Reservoirs	Construction fencing at identified areas at Soulajule and Nicasio Reservoirs to prevent cattle from entering.		To Be Determined	
50	BCPUD	Treatment Facility Microfiltration Unit	Installation of microfiltration filter unit within existing water treatment facility.		As Soon As Possible	
51	BCPUD	Olemas-Bolina Road Water Main Replacement	Replacement of water main.		As Soon As Possible	
52	BCPUD	Disinfection Byproduct Treatment Facility	Construction of filtration unit to reduce chlorine disinfection byproducts.		As Soon As Possible	

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	Implement-ing Agency	Project	Description	Status	Schedule	
					Start	Complete
53	BCPUD	Water Storage Expansion	Expand water storage capacity.	Feasibility study completed.		2009
54	BCPUD	Reed Removal from Reservoirs	Removal of invasive reeds from reservoirs to restore storage capacity.			2009
55	BCPUD	Distribution Pipeline Replacement	Replace aging water distribution system pipeline.		As Soon As Possible	
56	BCPUD	Surfers Overlook Water Main Replacement	Replace and relocate existing water line threatened by coastal bluff erosion.		As Soon As Possible	
57	TVCSD	Tertiary Treatment & Recycling Study	Feasibility study and development of plans for construction of system to produce tertiary treated water for irrigation use.			September 2008
58	TVCSD	Tertiary Treatment & Recycling Study 2	Construction of a filtering and disinfecting system to produce recycled water based on findings of the above feasibility/design study.			September 2009
60	NMWD	Emergency Pipeline Provisions Across San Andreas Fault	Install fire hydrants and purchase high pressure hose to provide emergency water supply to customers in event of an earthquake.		Within one year of Funding	
65	IPUD	Disinfection Byproduct Treatment Facility	Construction of filtration unit to reduce chlorine disinfection byproducts.			Fall 2008
66	IPUD	Distribution Pipeline Replacement	Remove and replace a portion of the aging water distribution system pipeline.			December 2009
67	IPUD	Asset Management Plan	Develop a comprehensive asset management program to provide long-term planning through a systematic analysis of maintenance data and infrastructure condition.			January 2010
68	IPUD	Water Conservation Program	Develop water conservation program to include public education, provision of rebates for retrofits, and consideration of rate restructuring to encourage water conservation.	Water use statistics have been compiled.		March 2010
69	IPUD	Treated Water Storage Expansion	Replace four aging treated water storage tanks and expand storage capacity.			March 2010
WATER QUALITY IMPROVEMENT						
4	MMWD	Mount Tamalpais Roads and Trails Management Plan	Treat identified erosion sites to reduce sediment.	Sites identified in Mt. Tamalpais Road and Trail Management Plan	To Be Determined	
7	MMWD	Mercury Monitoring Project	Implementation of monitoring program for mercury in Soulajule Reservoir and downstream water releases per TMDL.		To Be Determined	

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	Implement-ing Agency	Project	Description	Status	Schedule	
					Start	Complete
11	MMWD	Lagunitas Creek Roads MOU Implementation - Sediment Reduction Projects	Implement highest priority sediment reduction projects associated with multi-agency MOU for maintenance and management of unpaved roads in the Lagunitas Creek watershed.	GIS mapping is completed.	To Be Determined	
12	MMWD	Lagunitas Creek Roads MOU Implementation – Assessment	Assess and identify specific sediment reduction projects to be implemented with development of database for project management and tracking.	GIS mapping completed.		
17	MMWD	Pipeline and Tank Access Road Stormwater Improvements	Road-related improvements such as outsloping, rolling dips, culvert replacements to better manage stormwater and reduce erosion.		To Be Determined	
22	RCD	Rancher Outreach Program	Develop rancher outreach tools to more effectively implement BMPs and monitoring studies (currently funded) on grazing lands.	SWRCB grant has been awarded for “Conserving Our Watersheds” program, but does not include outreach funding.		
31	MCPW, BCPUD, USNPS	Duxbury Reef ASBS Restoration Activities	Implement recommendations to improve facilities and discharge locations.	Coastal watershed assessment and recommendations complete.		Fall 2009
32	USNPS	Point Reyes ASBS Restoration	Implement recommendations to improve facilities and discharge locations.	Coastal watershed assessment and recommendations complete.		
33	USNPS	Tomales Bay Derelict Boat Removal	Remove identified derelict boats from Tomales Bay.	Boats identified in TB Vessel Management Plan	As Soon As Possible	
34	USNPS	Vessel Management Program	Implement recommended mooring management strategies.	Boats identified in TB Vessel Management Plan	As Soon As Possible	
35	USNPS	Olema Trail Reroute and Stream Crossing Replacement	Trail rehabilitation to include bridge replacement, culvert removal, and installation of weirs adjacent to Olema Valley Creek and wetlands.			
36	USNPS	Stewart Camp Septic Replacement	Replace existing aging septic system and locate further from existing stream.			
37	USNPS	Devils Gulch Road/Trail Sediment Control	Rehabilitation and stabilization activities along unpaved road used for recreational and limited vehicle access; and installation of fencing to exclude cattle from riparian corridor.			
38	USNPS	Tomales Beach Campground Improvements	Replace portable toilets with permanent pit toilets.			

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	Implement-ing Agency	Project	Description	Status	Schedule	
					Start	Complete
39	STATE PARKS RWQCB	Tomales Bay State Park Leach Line Replacement	Replace one septic system and upgrade another that serve public restrooms in state park.	Project identified in Tomales Bay State Park General Plan		Fall 2008
42		Nicasio & Soulajule Reservoir Water Quality Improvement	Develop and implement watershed management strategy for Nicasio and Soulajule Reservoir to reduce sediment and nutrient loads and assess reservoir operations for measures to improve downstream water quality.			
44	RWQCB	Lagunitas Creek Sediment Reduction	Study to determine roads and sediment budgets to develop prioritized list of sediment reduction projects in San Geronimo and Lagunitas Creek watersheds.			
46	SPAWN	Lagunitas Creek Watershed Restoration - Bank Repairs	Work with landowners to design and implement 12 biotechnical bank/stabilization repair projects to reduce sediments into San Geronimo Creek.	CEQA compliance and securing permits in progress.		2009 / 2010
47	SPAWN	Lagunitas Creek Watershed Restoration - Road Repairs	Repair, re-contour and rehabilitate 2 miles of high-priority unpaved, non-County maintained roads in the San Geronimo Creek watershed.	CEQA compliance and permit acquisition in process.		2010
59	MCEHS	East Shore Wastewater Upgrade	Continuation of East Shore Wastewater Upgrade program that provides financial support to landowners to repair or replace leaking or failing septic tanks.	Phase 1 permit application and CEQA compliance nearing completion		2010
61	RCD	Conserving Our Watersheds, Phase II	Implement Phase II of existing funded program to develop and implement projects and best management practices to improve water quality and habitat and improve habitat.	Phase I in progress.	1-5 years depending on funding	
64	USNPS	Grazing BMPs	Implement BMPs at 10 priority locations on actively ranched lands, primarily including headcut stabilization and repair, wetland and riparian protection, and seasonal pasture development.	Field assessment and identification of priority sites complete.		Spring 2008
70	MCOSD	San Geronimo Road & Trail Sediment Reduction	Implement highest priority sediment reduction projects on Marin County Open Space District roads and trails.	Studies that identify priorities are complete.		October 2009
ECOSYSTEM RESTORATION & HABITAT IMPROVEMENT						
9	MMWD	Lagunitas Creek Riparian Vegetation Work	Riparian revegetation, biotechnical bank stabilization, invasive weed control at sites along Lagunitas Creek.		To Be Determined	

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	Implement-ing Agency	Project	Description	Status	Schedule	
					Start	Complete
21	MMWD	Invasive Aquatic Weed Management Program	Implementation of recommended aquatic weed management measures.	Aquatic Weed Assessment complete.		
23	TU	Dickson Weir & Equestrian Facility Feasibility Study	Prepare study for North Fork of San Geronimo Creek regarding fishery habitat value, impact of sediment, and feasibility of instream restoration.		Nine months from funding	
24	MCPW	Arroyo Creek Fish Passage Restoration	Remove fish passage barrier (culvert), replace with natural arch.	Multiple studies support this specific project. Design to be completed in spring 2007; permit applications submitted in June 2007; and CEQA completed in September 2007.	April 2007	October 2009
25	MCPW	East Fork Woodacre Fish Passage	Remove fish passage barrier (culvert), replace with natural arch.	Multiple studies support this specific project. Design to be completed in spring 2007; permit applications submitted in June 2007; and CEQA completed in September 2007.	April 2007	October 2009
26	MCPW	San Geronimo Creek Fish Passage Restoration	Construct roughened ramp and series of weirs below an existing box culvert identified as severe fish passage barrier.	Multiple studies support this specific project. Design to be completed in spring 2007; permit applications submitted in June 2007; and CEQA completed in September 2007.	April 2007	October 2009
27	MCPW	Woodacre Creek #3 Fish Passage Restoration	Remove fish passage barrier (culvert), and replace with natural arch.	Multiple studies support this specific project. Design to be completed in spring 2007; permit applications submitted in June 2007; and CEQA completed in September 2007.	April 2007	October 2009
28	MCWP	Kent Canyon Creek Fish Passage Restoration	Remove fish passage barrier (culvert), and replace with natural arch.	Multiple studies support this specific project. Design to be completed in spring 2007; permit applications submitted in June 2007; and CEQA completed in September 2007.	April 2007	October 2009

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	Implement-ing Agency	Project	Description	Status	Schedule	
					Start	Complete
45	RWQCB	Riparian Zone and Large Woody Debris Enhancement	Implement public outreach and work with agencies and landowners to remove invasive plants, implement riparian revegetation, install fencing to exclude cattle from creeks, prepare LWD budget, and monitoring in Lagunitas and San Geronimo Creeks.		2007	2010
48	SPAWN	San Geronimo Salmonid Monitoring	Extend existing monitoring of smolt outmigration in San Geronimo tributaries.	Second year of monitoring is complete; NMFS & CDFG permits secured through 2011	2007	Spring 2011
63	RCD	Coastal Prairie Improvement Project	Study to assess rangeland health and weed infestations; provide alternatives for weed eradication; implement demonstration projects; and provide public education.		2-6 years	
73	MMWD	Invasive Weed Management	Implement recommended strategies for managing and eradicating invasive plant species.	Assessment of known methods currently is being conducted		
WETLANDS RESTORATION						
30	MCPW	Silver Hills creek Restoration	Conduct engineering analysis and prepare conceptual plans to restore the outlet of Silver Hills Creek to Olema Marsh and remove culverts.	Phase 1 hydraulic and geomorphic investigations and engineering design for part of area complete	January 2009	October 2009
40	TBWC	Chicken Ranch Beach Restoration	Design, engineer and initiate a restoration project to improve the hydrologic functionality of the lower elevations of the Chicken Ranch Beach subwatershed, to include a mix of wetland habitat types.	Preliminary and conceptual designs and investigations complete	June 2008	March 2010
STORMWATER / FLOOD MANAGEMENT						
10	MMWD	Water Conservation: Rainwater Capture and Stormwater Use Project	Research approaches for rainfall capture and develop public outreach component with possible financial incentive for implementation of measures.	In development		
43	RWQCB	Stormwater, Flood, Instream Flow Management	Identify areas where floodplains and streams can be reconnected and implement small-scale stormwater catchment projects and water conservation measures.			

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	Implement-ing Agency	Project	Description	Status	Schedule	
					Start	Complete
49	SPAWN	Lagunitas Creek Watershed Stormwater Initiative	Implement stormwater catchment designs at 30 residential sites in the Lagunitas Creek watershed, — i.e., San Geronimo Valley.		Two years	
RECREATION / PUBLIC ACCESS						
19	MMWD	Inkwells/Shafter Bridge Crossing Project: Planning	Study to determine improvements to facilitate equestrian and bicyclist crossing over Lagunitas Creek without impacting stream banks or habitat.		To Be Determined	
20	MMWD	Inkwells/Shafter Bridge Crossing Project	Construction / implementation of identified solution at Shafter Bridge/Inkwells Bridge to allow better crossing.		To Be Determined	
WATERSHED ASSESSMENT / MANAGEMENT						
6	MMWD	Watershed Assessment and Planning Program	Program to develop studies and management plans to address vegetation and wildlife management needs for MMWD's watershed lands.	Program elements are being developed	To Be Determined	
29	MCPW	Marin County Watershed Management Plan	Update 2004 Marin County Watershed Management Plan.		October 2007	October 2008
41	IPUD	Climate Change Study	Develop computer-based model to assess effect of climate change on water-related resources over the next 50 years.	Planning has begun.		June 2008
OTHERS						
62	RCD	Ag Land Renewable Energy Program	Implement renewable energy alternatives for agricultural operations.	One successful project completed with installation of methane digestion system.	3-5 years	
72	MALT	Ag Land Conservation Easement Acquisition	Implementation of eight agricultural conservation easement projects.	Project development is underway.		December 2008

**TABLE 6-3
MANAGEMENT STRATEGIES IMPLEMENTED BY SHORT-TERM PRIORITY PROJECTS**

ID #	PROJECT	WATER SUPPLY RELIABILITY			WATER QUALITY			ECOSYSTEM RESTORATION & HABITAT IMPROVEMENT					STORMWATER & FLOOD MANAGEMENT		GROUNDWATER MANAGEMENT
		Water Supply Reliability	Water Conserve	Water Re-cycling	Water Treatment	NPS Pollution	Water Quality	Eco-System	Habitat	Wet-lands	Recreation & Access	LU & Watershed Plnng	SW Mngmt	Flood Mngmt	GW Management
1	NMWD-Gallagher Wells & Pipeline	X					X	X	X					X	X
12	MMWD-Lagunitas Creek Roads MOU Implementation Assessment and Inventory					X	X	X					X		
24	MCPW-Arroyo Creek Fish Passage Restoration					X	X	X		X		X			
26	MCPW-San Geronimo Creek Fish Passage Restoration					X	X	X		X		X			
30	MCPW-Silver Hills Creek Restoration Project					X	X			X			X	X	
31	MCPW, BCPUD, USNPS-Duxbury Reef Reserve Restoration					X	X				X	X			
32	USNPS-Pt. Reyes Headlands Reserve Restoration					X	X				X				
33	USNPS-Tomales Bay Boat Removal					X	X	X							
37	USNPS-Devil's Gulch Road/Trail Sediment Control					X	X	X							
38	USNPS-Tomales Bay Beach Campground Access and Restroom Improvements				X	X	X				X				

ID #	PROJECT	WATER SUPPLY RELIABILITY			WATER QUALITY			ECOSYSTEM RESTORATION & HABITAT IMPROVEMENT					STORMWATER & FLOOD MANAGEMENT		GROUNDWATER MANAGEMENT
		Water Supply Reliability	Water Conserve	Water Re-cycling	Water Treatment	NPS Pollution	Water Quality	Eco-System	Habitat	Wet-lands	Recreation & Access	LU & Watershed Plnng	SW Mngmt	Flood Mngmt	GW Management
39	CPR-Hearts Desire Beach Restroom Leach Line Replacement		X		X	X	X				X				
40	TBWC-Chicken Ranch Beach Restoration					X	X	X		X	X		X	X	
46	SPAWN-Lagunitas Creek Watershed Restoration Program					X	X	X				X			
47	SPAWN-Lagunitas Creek Watershed Restoration - Road Repairs					X	X	X				X	X		
49	SPAWN-Lagunitas Creek Stormwater Initiative	X	X			X	X	X				X	X		
52	BCPUD-Disinfection Byproduct Treatment Facility	X			X		X								
57	TVCSD-Tertiary Treatment & Recycling Planning Study	X	X	X	X		X					X			X
59	East Shore Group - Wastewater Upgrade			X	X	X	X			X					
61	RCD-Habitat Improvement Project Implementation					X	X	X	X	X		X			
65	IPUD-Treatment Disinfection Byproducts				X		X								
70	MCOSD- San Geronimo Road/Trail Sediment Reduction					X	X	X	X	X	X		X	X	
74	USNPS-Riparian Restoration				X	X	X	X						X	