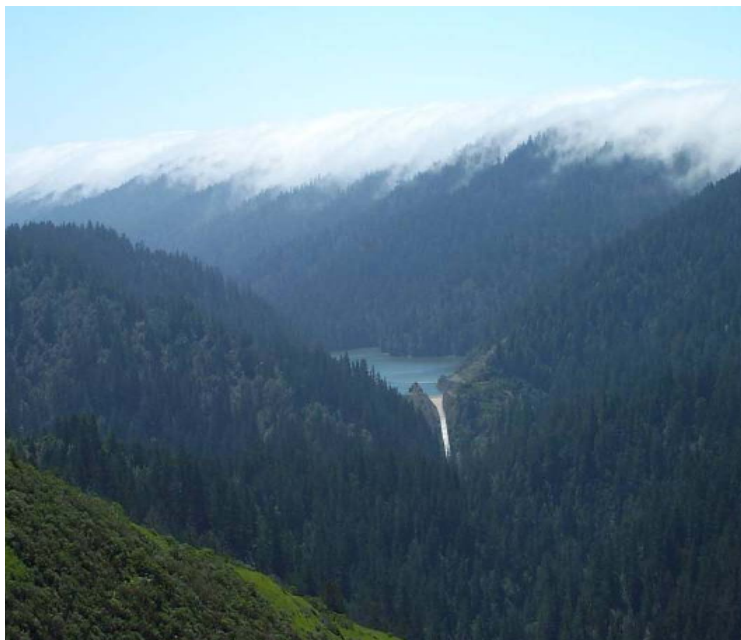


**Lagunitas Creek Stewardship Plan
Marin Municipal Water District
Final – June 2011**

TABLES

Table 1: Chronology of events for the Marin Municipal Water District and Lagunitas Creek.

1953	MMWD completes construction of Peters Dam on Lagunitas Creek to form Kent Lake.
1970s	First fishery monitoring studies conducted by Fish & Game, establishing electrofishing sampling sites.
1976&1977	Two-year drought.
1982	MMWD completes construction to raise Peters Dam; the dam is raised by 45 feet, doubling the capacity of Kent Lake, with a new spillway.
1995	SWRCB concludes water rights hearings and issues Order WR95-17.
1997	MMWD & SWRCB approve the <i>Lagunitas Creek Sediment and Riparian Management Plan</i> .
2007	Milestone for the ten-year period of the <i>Lagunitas Creek Sediment and Riparian Management Plan</i> .
2008	<i>Lagunitas Creek Limiting Factors Analysis</i> completed.
2009	MMWD develops new fishery management plan for Lagunitas Creek.



Peters Dam and Kent Lake, Lagunitas Creek Watershed

Table 2: Requirements of the Marin Municipal Water District stipulated in State Water Board Order WR95-17 for Lagunitas Creek.

No.	Heading	Requirement
1	Instream Flow Requirement	A schedule of minimum flows must be maintained at the U.S. Geological Survey (USGS) stream gage located in Samuel P. Taylor State Park (see below). During a normal water year, the minimum flow ranges from 8 cubic feet per second (cfs) to 25 cfs, depending on the time of year. During a dry water year, the minimum flow ranges between 6 cfs and 20 cfs. In addition, a metered release of at least 1 cfs must be made from Kent Lake into Lagunitas Creek, directly below Peters Dam, at all times.
2	Upstream Migration Flows	Four upstream migration flows must occur, between November and February of each year, to provide for the upstream migration of anadromous fish. An upstream migration flow is at least 35 cfs for three consecutive days, at the USGS gage in SP Taylor Park.
3	Water Year Classification	A water year classification must be made and determine if there is a normal or dry water year and if the normal year or dry year minimum flow schedule shall be maintained. A normal year consists of a January 1 st , 15-month index of 48 inches of precipitation and an April 1 st , 6-month index of 28 inches of precipitation. Rainfall amounts less than these indices are a dry year classification.
4	Water Temperature	– Mean daily water temperature, at the USGS gage in SP Taylor Park must be at or less than 58 degree Fahrenheit during the summer months (May – October) and at or less than 56 degree during the winter months (November – April).
5	Special Circumstances	In the event the District determines that it cannot meet the flow and/or water temperature conditions, a process must be followed to notify and consult with the following agencies to attempt to develop an alternative operational plan: SWRCB, DFG, U.S. Fish & Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS).
6	Ramping	Water releases into Lagunitas Creek, from Kent Lake, must be controlled and minimize rapid changes in flow in Lagunitas Creek (i.e., reduce the potential for rapid increases or decreases in flow).
7	Control of Sediment	Prepare and implement a sediment control plan to reduce sedimentation in the Lagunitas Creek, watershed. A draft and final plan must be developed in coordination with public agencies and allow for public review and input.
8	Riparian Management Plan	Prepare and implement a riparian management plan to improve riparian vegetation and woody debris within the Lagunitas Creek watershed. A draft and final plan must be developed in coordination with public agencies and allow for public review and input.

Table 2: Requirements of the Marin Municipal Water District stipulated in State Water Board Order WR95-17 for Lagunitas Creek.

9	Monitoring Fishery Resources	Prepare and implement a workplan for monitoring the coho salmon, steelhead, and California freshwater shrimp populations of Lagunitas Creek. The plan must be developed in consultation with DFG, USFWS, and NMFS.
10	Gages	Ensure that a continuous record of daily stream flow and water temperature is maintained at the USGS gage in SP Taylor Park.
11	Reporting	Prepare and submit an annual report to the SWRCB that verifies the District's compliance with Order WR95-17, over the previous water year. The water year runs from October 1 st through September 30 th .

Lagunitas Creek Minimum Instream Flow Requirements

Normal Water Year Requirements

Time Period	Flow (cfs)*
November 1/15** December 31	20
January 1 – March 15	25
March 14 – March 31	20
April 1 – April 30	16
May 1 – June 15	12
June 16 – November 1/15	8

Dry Water Year Requirements

Time Period	Flow (cfs)*
November 1/15** March 31	20
April 1 – April 30	14
May 1 – June 15	10
June 16 – November 1/15	6

* cfs = cubic foot per second.
Flow as measured at the USGS gage at S.P. Taylor State Park.

** The minimum flow of 20 cfs in November shall begin following the first storm that produces a “trigger “ flow of 25 cfs at the USGS State Park gage; in absence of a trigger flow, the 20 cfs requirement shall become effective on November 15th of each year.

Notes:

- Order WR95-17 amended Water Right Permits 5633, 9390, and 18546.
- Order WR95-17 further amended Permit 12800 with the condition that MMWD shall not release water from Nicasio Reservoir directly into Lagunitas Creek, or its tributaries, between the base of Peters Dam and the confluence with Nicasio Creek.

LAGUNITAS CREEK STEWARDSHIP PLAN - Marin Municipal Water District (MMWD)

- MMWD will pursue these activities under the Lagunitas Creek Stewardship Plan.
- MMWD will pursue these actions in collaboration with other entities involved with Lagunitas Creek.
- MMWD will seek grants and other funding sources for these actions, along with commitments of staff time and financial contributions.

ELEMENT	ACTION	DESCRIPTION	Collaborators
Category 1: On-Going Mandatory Requirements of SWRCB Order WR95-17.			
Compliance with Ongoing Requirements of WR95-17	Instream Flows	Maintain the minimum flows at the SP Taylor stream gage, per the schedule specified in Order WR95-17.	SWRCB
"	Upstream Migration Flows	Ensure that four upstream migration flows are provided between Nov. 1st and Feb. 3rd each year, as stipulated in Order WR95-17	SWRCB
"	Water Year Classification	Determine the water year classification, as a normal or dry year, and maintain stream flows under the normal or dry year requirements of Order WR95-17.	SWRCB
"	Water Temperature	Ensure sufficient water releases are made from Kent Lake, into Lagunitas Creek, to meet and maintain the minimum stream flows at the SP Taylor gage and that mean daily water temperatures at the gage are being recorded and reported.	SWRCB
"	Special Circumstances	Follow the Special Circumstance reporting procedures of Order WR95-17 if the stream flow and/or water temperature conditions of the Order cannot be met.	SWRCB, DFG, NMFS, USFWS
"	Ramping	Control releases from Kent Lake in order to minimize rapid changes in flow in Lagunitas Creek.	SWRCB
"	Gages	Ensure that the USGS stream gage at SP Taylor Park remains in operation and that the mean daily stream flow and temperature of Lagunitas Creek are recorded through continuous monitoring.	SWRCB, USGS, State Parks
"	Reporting	Compile and submit an annual report to the SWRCB, describing MMWD's activities and compliance with Order WR95-17.	SWRCB

Table 3. Summary of actions for the Lagunitas Creek Stewardship Plan.

ELEMENT	ACTION	DESCRIPTION	Collaborators
Category 2: Actions MMWD Will Lead.			
Winter Habitat Enhancement	Winter Habitat Enhancement - Assessment	Conduct a two-phase concept & design assessment of Lagunitas Creek and lower Olema Creek to enhance overwinter habitat for salmonids.	Fish & Game, USFWS, NPS, State Parks, NOAA
Sediment Reduction and Management	Sediment Source Treatments in the Watershed	Implements prescribed sediment reduction treatments at priority road-related sites in Lagunitas Creek watershed, under the 319(h) Lagunitas Cr. Water Quality & Habitat Improvement Project - Cheda Cr., Mclsaac Cr., Cross-Marin Trail, and Dog Creek.	SWRCB, RWQCB, State Parks, NPS
"	Sediment Source Roads Assessment	Complete a comprehensive assessment of unpaved roads in the Lagunitas Creek Watershed, including a site inventory and prioritizing sediment source repair sites on about 105 miles of unpaved roads, under the Lagunitas Cr. Roads Assessment Project.	DFG, NOAA, State Parks, NPS, RCD
"	Sediment Source Management Roads GIS	Update the GIS of roads in the Lagunitas Creek watershed, completed in 2007, with new information on road assessments, treatments, and maintenance.	Marin County, NPS, State Parks, RCD, SPAWN
"	Sediment Source Treatments in the Watershed	Implement repairs at some of the sediment source sites identified in previous watershed assessments; focus on roads and other human-induced erosion sites, on public lands in the mainstem Lagunitas Creek watershed between Peters Dam and Nicasio Creek.	State Parks, NPS
"	Streambed Gravel Management	Evaluate goals and opportunities for gravel augmentation and enhancement in Lagunitas Creek and tributaries; implement a gravel management strategy in mainstem Lagunitas Creek.	TAC
Instream & Riparian Habitat Enhancement	Rearing Habitat Enhancement with Large Woody Debris (LWD)	Install and maintain LWD structures in mainstem Lagunitas Creek, downstream of Peters Dam and through S.P. Taylor State Park and on MMWD lands along San Geronimo Creek.	State Parks
"	Riparian Vegetation Enhancement	Plant and maintain native riparian vegetation between Peters Dam and Shafter Bridge, under the Mt. Tamalpais Watershed Gateway Project and future efforts.	Coast Conservancy, Resources Agency, SPAWN
Biotechnical Bank Stabilization	Biotechnical Bank Stabilization - Lagunitas Booster Station	Develop and implement biotechnical bank stabilization on San Geronimo Creek at MMWDs Lagunitas Booster Station site; coupled with water discharge dissipation from the site.	n/a
"	Biotechnical Bank Stabilization - Below Peters Dam	Develop and implement biotechnical bank stabilization and riparian revegetation at Below Peters Dam site.	n/a
Ca. Freshwater Shrimp Habitat Enhancement	Freshwater Shrimp Habitat Enhancement - Assessment	Data review and evaluation to develop habitat enhancement measures specifically designed to benefit freshwater shrimp.	USFWS, USGS, NPS, State Parks
Survey & Monitoring	Survey & Monitoring Workgroup	Coordinate monitoring surveys and protocols for consistent methodologies and data sharing.	TAC, TBWC
"	Stream Flow Monitoring	Conduct continuous monitoring of stream flow at two gages: the USGS gage at Point Reyes Station, on Lagunitas Creek; and the MMWD gage Lagunitas Rd. on San Geronimo Creek.	USGS, NPS, County, North Marin Water District
"	Juvenile Salmonid Surveys	Annual juvenile salmonid survey; mainstem Lagunitas Creek, mainstem San Geronimo Creek, and Devil's Gulch.	NPS
"	Salmon Spawner Surveys	Annual salmon spawner survey; mainstem Lagunitas Creek, mainstem San Geronimo Creek, and Devil's Gulch.	NPS, SPAWN

Table 3. Summary of actions for the Lagunitas Creek Stewardship Plan.

ELEMENT	ACTION	DESCRIPTION	Collaborators
Survey & Monitoring	Salmon Smolt Surveys	Annual salmon smolt survey; mainstem Lagunitas Creek.	NPS, SPAWN
"	Salmon Winter Survey	Conduct a juvenile coho winter habitat utilization study in Lagunitas Creek, including track movement of PIT tagged fish.	State Parks, NPS, TAC
"	Salmon Fry Emergence Survey	Investigate conducting another emergence study to further investigate the question of juvenile mortality during the emergence stage, as a potential limiting factor.	State Parks, NPS, TAC
"	California Freshwater Shrimp Surveys	Annual Ca. freshwater shrimp survey; mainstem Lagunitas Creek.	USFWS
"	Habitat Typing Surveys	Habitat typing surveys every 5 years through Lagunitas Creek, San Geronimo Creek, and Devil's Gulch.	Fish & Game, AmeriCorps/WSP
"	Sediment & Streambed Monitoring	Sampling in Lagunitas Creek, San Geronimo Creek, and Devil's Gulch for: bed elevation; grain sizes; fine sediments; gravels; and characteristics of large woody debris.	RWQCB
"	Water Quality Monitoring	Monthly grab samples at 4 sites in Lagunitas, Nicasio, and San Geronimo Creek for: Temperature; pH; Turbidity; Alkalinity; Hardness; Copper; Total Suspended Solids; and Settleable Solids	TBWC
"	Project Site Monitoring	Annual inspections of project sites.	TAC
Programs and Policies	Roads MOU	Follow the guidelines and practices included in the MOU for Maintenance and Management of Unpaved Roads in the Lagunitas Creek Watershed.	County, MCOSED, State Parks, NPS, RCD, TAC
"	Woody Debris MOU	Follow the guidelines and practices included in the MOU for Woody Debris Management in Riparian Areas of the Lagunitas Creek Watershed.	County, MCOSED, State Parks, NPS, RCD, TAC
"	Mt. Tamalpais Watershed Management Policy	Follow MMWD Board Policy No. 7 - Mt. Tamalpais Watershed Management Policy.	n/a
"	Wells Policy	Revised MMWD Board Policy No. 3 - Wells and other Private Sources Policy; incorporate protection of stream flows into the policy.	TAC
Collaboration and Outreach	Lagunitas TAC	Remain an active participating entity of the TAC; continue to facilitate the TAC meetings, in lieu of another participating entity; encourage other TAC members to remain active participants.	TAC
"	Partnerships & Collaboration	Partnerships and Coordination with other agencies through the TBWC, North Bay Watershed Association, State & Federal coho & steelhead recovery efforts, and the Bay Area IRWMP Coordinating Committee.	TAC, TBWC, NBWA, and others
"	Public Involvement & Education	Public involvement and outreach through public meetings, volunteer events, participation in Trout-in-the-Classroom, and other educational opportunities	Public, TAC

Table 3. Summary of actions for the Lagunitas Creek Stewardship Plan.

ELEMENT	ACTION	DESCRIPTION	Collaborators
Category 3: Actions MMWD Will Participate In But Not Necessarily Lead.			
Winter Habitat Enhancement	Winter Habitat Enhancement - Construction	Construct the winter habitat enhancement features, as designed, in Lagunitas Creek and lower Olema Creek.	Fish & Game, NOAA, NPS, State Parks, RCD
Sediment Reduction and Management	Sediment Source Treatments in the Watershed	Implement repairs at some of the sediment source sites identified in previous watershed assessments, focus on roads and other human-induced erosion sites, in the San Geronimo Valley and Olema Creek.	County, MCOSED, State Parks, NPS, RCD
"	Streambed Gravel Management	Implement a gravel management strategy in the tributaries to Lagunitas Creek.	TAC
Instream & Riparian Habitat Enhancement	Rearing Habitat Enhancement with Large Woody Debris (LWD)	Install and maintain LWD structures in mainstem Lagunitas Creek, downstream of S.P. Taylor State Park, and in Devil's Gulch.	State Parks, NPS, TU
"	Devil's Gulch Habitat Enhancement	Evaluate, develop, and implement habitat enhancement strategies for Devil's Gulch.	TU, State Parks, NPS, RCD
"	Riparian Vegetation Enhancement	Install native plants along the edge of the stream channel, to enhance habitat for the California freshwater shrimp, at various locations through the lower State Park and Tocaloma reaches of Lagunitas Creek.	USFWS, NPS, State Parks
Biotechnical Bank Stabilization	Biotechnical Bank Stabilization - S.P. Taylor Park	Develop and implement biotechnical bank stabilization and riparian revegetation at Nicasio Transmission Line retaining wall site in S.P. Taylor Park.	State Parks
Ca. Freshwater Shrimp Habitat Enhancement	Freshwater Shrimp Habitat Enhancement - Construction	Installation of habitat enhancement projects, identified in prior assessment, for shrimp habitat enhancement; may include woody debris structures and riparian vegetation plantings along the lower State Park and Tocaloma reaches.	USFWS, USGS, NPS, State Parks
Aquatic Invasive Species (AIS) Management	Early Detection/Rapid Response	Conduct baseline surveys of AIS and conduct monitoring for detection of New Zealand mud snail, quagga & zebra mussels.	TAC, TBWC
"	Protocols for cleaning, storage, and inspections of field equipment and gear	Develop and put into practice protocols for AIS controls through cleaning, storage, and inspections of field gear and equipment that will enter any water body within the watershed.	TAC, TBWC
"	Education	Develop and provide educational material about AIS; disseminate to all stakeholders and the general public visiting the watershed.	TAC, TBWC
"	Invasive Plant Control	Remove invasive plants from the riparian corridor; target species: cape ivy; take a systematic, piece-meal approach to minimize impacts to existing habitat.	NPS, State Parks, County, SPAWN

Table 3. Summary of actions for the Lagunitas Creek Stewardship Plan.

LAGUNITAS CREEK STEWARDSHIP PLAN - Marin Municipal Water District (MMWD)

- MMWD will pursue implementation of these actions under the Lagunitas Creek Stewardship Plan, under the schedule, duration, and frequency listed.
- MMWD will pursue these actions in collaboration with other entities involved with Lagunitas Creek.
- MMWD will seek grants and other funding sources for these actions, along with commitments of staff time and financial contributions.

ELEMENT	Section in Report	ACTION	DESCRIPTION	SCHEDULE	Duration (No. of Years)	Frequency
Continued Compliance with the Requirements of Order WR95-17	4.1	Instream Flows	Maintain the minimum flows at the SP Taylor stream gage, per the schedule specified in Order WR95-17.	2011 - 2020	10	Continuous
		Upstream Migration Flows	Ensure that four upstream migration flows are provided between Nov. 1st and Feb. 3rd each year, as stipulated in Order WR95-17	2011 - 2020	10	Annual
		Water Year Classification	Determine the water year classification, as a normal or dry year, and maintain stream flows under the normal or dry year requirements of Order WR95-17.	2011 - 2020	10	Annual
		Water Temperature	Ensure sufficient water releases are made from Kent Lake, into Lagunitas Creek, to meet and maintain the minimum stream flows at the SP Taylor gage and that mean daily water temperatures at the gage are being recorded and reported.	2011 - 2020	10	Continuous
		Special Circumstances	Follow the Special Circumstance reporting procedures of Order WR95-17 if the stream flow and/or water temperature conditions of the Order cannot be met.	2011 - 2020	10	As Needed
		Ramping	Control releases from Kent Lake in order to minimize rapid changes in flow in Lagunitas Creek.	2011 - 2020	10	Continuous
		Gages	Ensure that the USGS stream gage at SP Taylor Park remains in operation and that the mean daily stream flow and temperature of Lagunitas Creek are recorded through continuous monitoring.	2011 - 2020	10	Continuous
		Reporting	Compile and submit an annual report to the SWRCB, describing MMWD's activities and compliance with Order WR95-17.	2011 - 2020	10	Annual

Table 4. Schedule for implementation of actions under the Lagunitas Creek Stewardship Plan.

ELEMENT	Section in Report	ACTION	DESCRIPTION	SCHEDULE	Duration (No. of Years)	Frequency
Winter Habitat Enhancement	4.2	Winter Habitat Enhancement - Assessment	Conduct a two-phase concept & design assessment of Lagunitas Creek and lower Olema Creek to enhance overwinter habitat for salmonids.	2011 - 2013	3	Project Site Specific
		Winter Habitat Enhancement - Construction	Construct the winter habitat enhancement features, as designed, in Lagunitas Creek and lower Olema Creek.	2011 - 2015	5	Project Site Specific
Sediment Reduction and Management	4.3	Sediment Source Treatments in the Watershed	Implements prescribed sediment reduction treatments at priority road-related sites in Lagunitas Creek watershed, under the 319(h) Lagunitas Cr. Water Quality & Habitat Improvement Project - Cheda Cr., Mclsaac Cr., Cross-Marin Trail, and Dog Creek.	2011 - 2013	2	Project Site Specific
		Sediment Source Roads Assessment	Complete a comprehensive assessment of unpaved roads in the Lagunitas Creek Watershed, including a site inventory and prioritizing sediment source repair sites on about 105 miles of unpaved roads, under the Lagunitas Cr. Roads Assessment Project.	2011 - 2013	2	Project Site Specific
		Sediment Source Management Roads GIS	Update the GIS of roads in the Lagunitas Creek watershed, completed in 2007, with new information on road assessments, treatments, and maintenance.	2011 - 2020	10	Project Site Specific
		Sediment Source Treatments in the Watershed	Implement repairs at some of the sediment source sites identified in previous watershed assessments, focus on roads and other human-induced erosion sites.	2011 - 2020	10	Project Site Specific
		Streambed Gravel Management	Evaluate goals and opportunities for gravel augmentation and enhancement in Lagunitas Creek and tributaries; develop and implement a gravel management strategy.	2011 - 2015	5	Project Site Specific

Table 4. Schedule for implementation of actions under the Lagunitas Creek Stewardship Plan.

ELEMENT	Section in Report	ACTION	DESCRIPTION	SCHEDULE	Duration (No. of Years)	Frequency
Instream & Riparian Habitat Enhancement	4.4	Rearing Habitat Enhancement with Large Woody Debris (LWD)	Install and maintain LWD structures in mainstem Lagunitas Creek, Devil's Gulch, and on MMWD lands along San Geronimo Creek.	2011 - 2020	10	Project Site Specific
		Devil's Gulch Habitat Enhancement	Evaluate, develop, and implement habitat enhancement strategies for Devil's Gulch.	2011 - 2015	5	Project Site Specific
		Riparian Vegetation Enhancement	Plant and maintain native riparian vegetation at sites between Peters Dam and Shafter Bridge; install native plants to enhance habitat for Ca. freshwater shrimp through lower State Parks and Tocaloma.	2011 - 2020	10	Project Site Specific
Biotechnical Bank Stabilization	4.5	Biotechnical Bank Stabilization - Lagunitas Booster Station	Develop and implement biotechnical bank stabilization on San Geronimo Creek at MMWDs Lagunitas Booster Station site; coupled with water discharge dissipation from the site.	2011 - 2013	3	Project Site Specific
		Biotechnical Bank Stabilization - Below Peters Dam	Develop and implement biotechnical bank stabilization and riparian revegetation at Below Peters Dam site.	2011 - 2013	3	Project Site Specific
		Biotechnical Bank Stabilization - S.P. Taylor Park	Develop and implement biotechnical bank stabilization and riparian revegetation at Nicasio Transmission Line retaining wall site in S.P. Taylor Park.	2011 - 2015	5	Project Site Specific

Table 4. Schedule for implementation of actions under the Lagunitas Creek Stewardship Plan.

ELEMENT	Section in Report	ACTION	DESCRIPTION	SCHEDULE	Duration (No. of Years)	Frequency
California Freshwater Shrimp Habitat Enhancement	4.6	Freshwater Shrimp Habitat Enhancement - Assessment	Data review and evaluation to develop habitat enhancement measures specifically designed to benefit freshwater shrimp.	2011 - 2013	3	Project Site Specific
		Freshwater Shrimp Habitat Enhancement - Construction	Installation of habitat enhancement projects, identified in prior assessment, for shrimp habitat enhancement; may include woody debris structures and riparian vegetation plantings along the lower State Park and Tocaloma reaches.	2011 - 2015	5	Project Site Specific
Survey & Monitoring	4.7	Survey & Monitoring Workgroup	Coordinate monitoring surveys and protocols for consistent methodologies and data sharing.	2011 - 2020	10	Continuous
		Stream Flow and Water Temperature Monitoring	Conduct continuous monitoring of stream flow at two gages: the USGS gage at Point Reyes Station, on Lagunitas Creek; and the MMWD gage Lagunitas Rd. on San Geronimo Creek.	2011 - 2020	10	Continuous
		Juvenile Salmonid Surveys	Annual juvenile salmonid survey; mainstem Lagunitas Creek, mainstem San Geronimo Creek, and Devil's Gulch.	2011 - 2020	10	Annual
		Salmon Spawner Surveys	Annual salmon spawner survey; mainstem Lagunitas Creek, mainstem San Geronimo Creek, and Devil's Gulch.	2011 - 2020	10	Annual
		Salmon Smolt Surveys	Annual salmon smolt survey; mainstem Lagunitas Creek.	2011 - 2020	10	Annual
		California Freshwater Shrimp Surveys	Annual Ca. freshwater shrimp survey; mainstem Lagunitas Creek.	2011 - 2020	10	Annual

Table 4. Schedule for implementation of actions under the Lagunitas Creek Stewardship Plan.

ELEMENT	Section in Report	ACTION	DESCRIPTION	SCHEDULE	Duration (No. of Years)	Frequency
Survey & Monitoring	4.7	Habitat Typing Surveys	Habitat typing surveys every 5 years through Lagunitas Creek, San Geronimo Creek, and Devil's Gulch.	2011 & 2016	2	Every 5 years
		Sediment & Streambed Monitoring	Sampling in Lagunitas Creek, San Geronimo Creek, and Devil's Gulch for: bed elevation; grain sizes; fine sediments; gravels; and characteristics of large woody debris.	2011 - 2020	5	Bi-Annual (on average); TTS sampling continuous
		Water Quality Monitoring	Monthly grab samples at 4 sites in Lagunitas, Nicasio, and San Geronimo Creek for: Temperature; pH; Turbidity; Alkalinity; Hardness; Copper; Total Suspended Solids; and Settleable Solids	2011 - 2020	10	Monthly
		Project Site Monitoring	Annual inspections of project sites.	2011 - 2020	10	Annual
Aquatic Invasive Species (AIS) Management	4.8	Early Detection/Rapid Response	Conduct baseline surveys of AIS and conduct monitoring for detection of New Zealand mud snail, quagga & zebra mussels.	2011 - 2020	5	Bi-Annual
		Protocols for cleaning, storage, and inspections of field equipment and gear	Develop and put into practice protocols for AIS controls through cleaning, storage, and inspections of field gear and equipment that will enter any water body within the watershed.	2011 - 2020	10	Continuous
		Education	Develop and provide educational material about AIS; disseminate to all stakeholders and the general public visiting the watershed.	2011 - 2020	10	Continuous
		Invasive Plant Control	Remove invasive plants from the riparian corridor; target species: cape ivy; take a systematic, piece-meal approach to minimize impacts to existing habitat.	2011 - 2020	10	Project Site Specific

Table 4. Schedule for implementation of actions under the Lagunitas Creek Stewardship Plan.

ELEMENT	Section in Report	ACTION	DESCRIPTION	SCHEDULE	Duration (No. of Years)	Frequency
Programs and Policies	4.9	Roads MOU	Follow the guidelines and practices included in the MOU for Maintenance and Management of Unpaved Roads in the Lagunitas Creek Watershed.	2011 - 2020	10	Continuous
		Woody Debris MOU	Follow the guidelines and practices included in the MOU for Woody Debris Management in Riparian Areas of the Lagunitas Creek Watershed.	2011 - 2020	10	Continuous
		Mt. Tamalpais Watershed Management Policy	Follow MMWD Board Policy No. 7 - Mt. Tamalpais Watershed Management Policy.	2011 - 2020	10	Continuous
		Wells Policy	Revised MMWD Board Policy No. 3 - Wells and other Private Sources Policy; incorporate protection of stream flows into the policy.	2011 - 2012	1	Project Site Specific
Collaboration and Outreach	4.10	Lagunitas TAC	Remain an active participating entity of the TAC; continue to facilitate the TAC meetings, in lieu of another participating entity; encourage other TAC members to remain active participants.	2011 - 2020	10	Continuous
		Partnerships & Collaboration	Partnerships and Coordination with other agencies through active participation in the TBWC, North Bay Watershed Association, State & Federal coho & steelhead recovery efforts, and the Bay Area IRWMP Coordinating Committee.	2011 - 2020	10	Continuous
		Public Involvement & Education	Public involvement and outreach through public meetings, volunteer events, participation in Trout-in-the-Classroom, and other educational opportunities	2011 - 2020	10	Continuous

Table 4. Schedule for implementation of actions under the Lagunitas Creek Stewardship Plan.

LAGUNITAS CREEK STEWARDSHIP PLAN - Marin Municipal Water District (MMWD)

- MMWD will pursue the actions in the Lagunitas Creek Stewardship Plan in priority.
- MMWD will pursue the actions in collaboration with other entities involved with Lagunitas Creek.
- MMWD will seek grants and other funding sources for the actions, along with commitments of staff time and other financial contributions.

CATEGORY	DESCRIPTION	TOTAL COST
Category 1	On-Going Mandatory Requirements of SWRCB Order WR95-17.	\$215,500
Category 2	Actions MMWD Will Lead.	\$5,746,445
Category 3	Actions MMWD Will Participate In But Not Necessarily Lead.	\$1,832,500
	TOTAL	\$7,794,445

Table 5. Summary of costs to implement actions in the Lagunitas Creek Stewardship Plan.