

The Tomales Bay Pathogen TMDL

Carmen Fewless

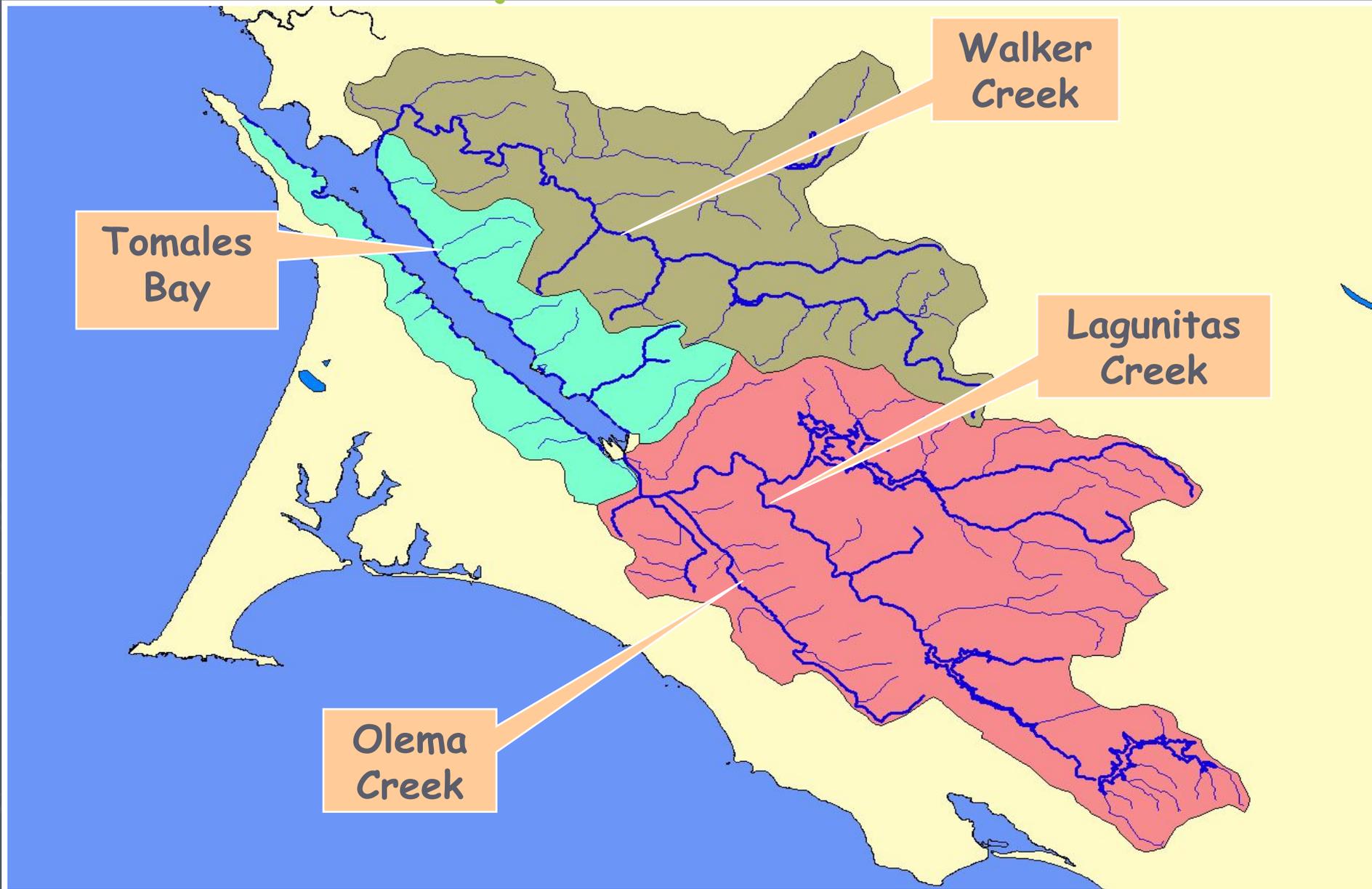
San Francisco Bay Water Board

May 05, 2010 TMDL Workshop

Overview

- Background Information
- TMDL
- Implementation Plan
- TMDL Implementation Case Study- The Grazing Waiver

Tomales Bay and its Tributaries



Tomales Bay and its Tributaries Do Not Fully Support Beneficial Uses

- Water contact recreation



- Non-contact water recreation



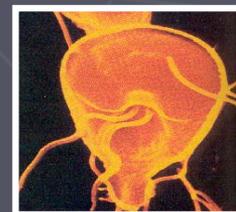
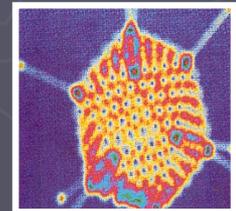
- Shellfish harvesting
 - ~70 closure days/year
 - 1998 illness outbreak
 - Human virus origin



What Are Pathogens?

Parasitic organisms capable of causing disease in their hosts

- Waterborne pathogens of fecal origin
- Made up of 3 groups of microorganisms
 - Viruses
(*Poliovirus, Hepatitis A*)
 - Bacteria
(*E.coli, Salmonella*)
 - Protozoa
(*Cryptosporidium, Giardia*)



Potential Pathogen Sources

Human Sources

- Faulty septic systems
- Boat discharges
- Sewage treatment facilities



Animal Sources

- Animal agriculture
 - Dairies
 - Grazing lands
 - Horse farms
- Municipal runoff (pet waste)
- Wildlife

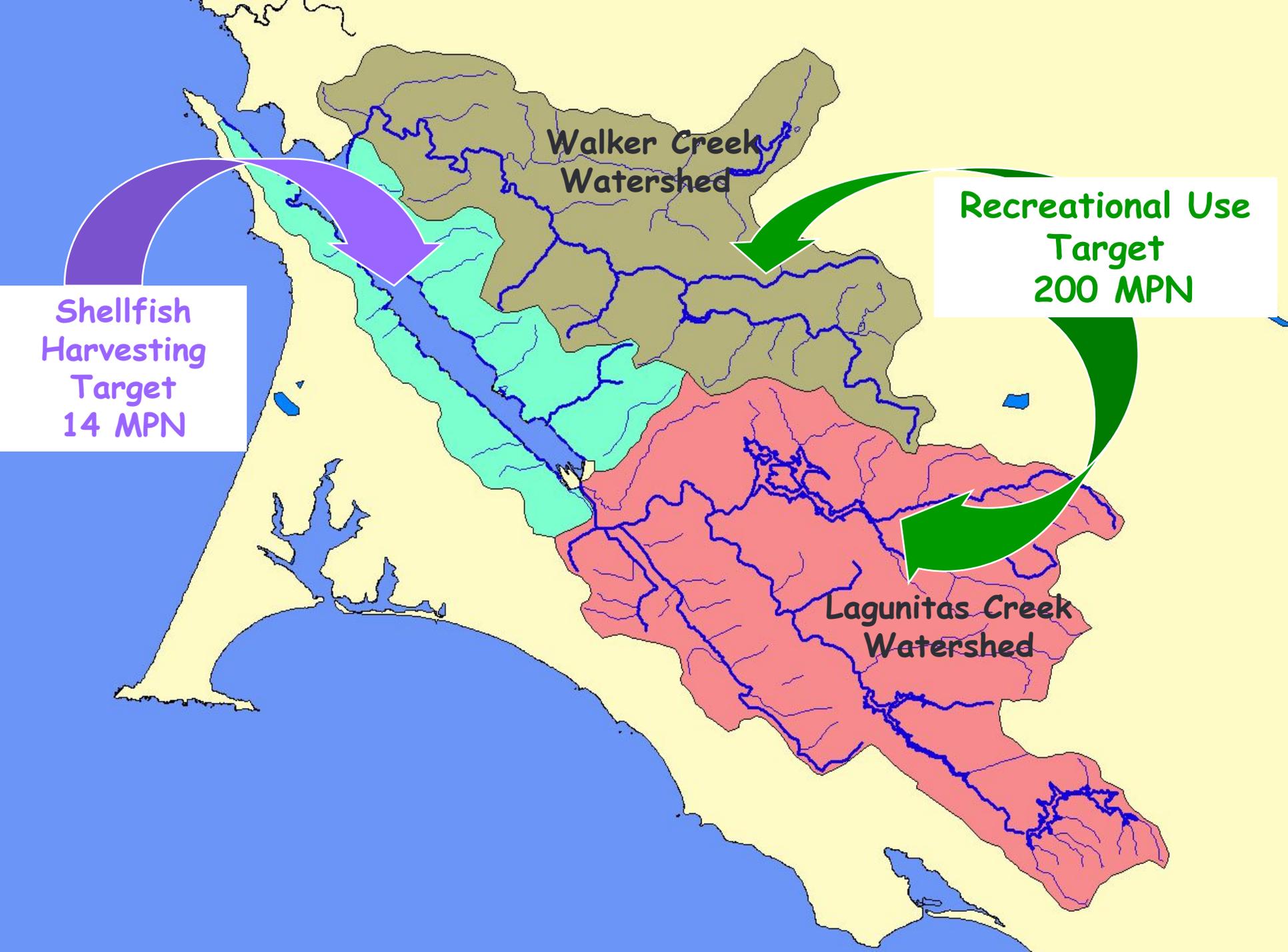


TMDL Water Quality Targets

- Bay Target protects shellfish harvesting (14 fecal coliform/100 mL Bay water)
- Tributary Target protects tributary recreational uses and Bay shellfish harvesting (200 fecal coliform/100 mL tributary water)
- Zero Discharge of Human Waste (existing Basin Plan waste discharge prohibition)

Concentration Based Load Allocations = Targets

- Human Sources
Discharge PROHIBITED
- Animal Sources- MPN Fecal Coliform / 100 mL of H₂O
 - <14 for Tomales Bay discharges
 - <200 for tributary discharges



Shellfish
Harvesting
Target
14 MPN

Walker Creek
Watershed

Recreational Use
Target
200 MPN

Lagunitas Creek
Watershed

Issues Raised During Stakeholder Process

Concern	Response
"Real problem is wildlife"	<p>Majority of tributary load coming from cattle</p> <p>Wildlife-only watersheds much lower pathogen concentrations</p>
"Use DNA testing to identify sources"	<p>Would consider as part of adaptive management</p> <p>Emphasis on implementation for all sources</p>

Issues Raised During Stakeholder Process

Concern	Response
"Targets too stringent"	<p>Necessary to protect shellfish consumption</p> <p>Implementation actions consistent with Nonpoint Source Policy</p>
"Targets not stringent enough"	<p>Tributary targets revised to achieve Bay targets</p>
"Too expensive"	<p>Bulk of costs for septic repair and cattle exclusion fencing</p> <p>Reduces nutrient and sediment loads</p>

Basic Implementation Approach

SOURCE ASSESSMENT
Identify potential sources



PLAN DEVELOPMENT
Identify source control actions



IMPLEMENTATION
Implement source controls

Implementation Plan

- All Source Categories (by 2009)
 - Identify potential problem areas, develop strategy or plan to reduce problems & implement plan
 - Built in flexibility since each source requires different strategy and method (ranches vs. septic vs. boaters)
 - Option of third parties assisting with compliance documentation or monitoring

What's Enforceable?

- Dischargers are required to comply with the implementation plan

Implementation Plan: Actions to Eliminate Discharges of Human Waste

- Septic Systems
Marin County evaluation program

- Boat Dischargers
Waste disposal management plan

- Wastewater Treatment Facilities - Existing permits



Implementation Plan: Actions to Reduce Contributions from Animal Sources

- Dairies

Existing permits

- Grazing Lands

Site-specific management measures

- Horse Facilities

Site-specific management measures

- Municipal Runoff

Marin County pathogen-specific stormwater plan



Adaptive Management Considerations

- Is there new information about testing methods, loads, or sources?
- Are we making progress toward targets?
- Should we modify monitoring or implementation actions?



TMDL Implementation

Conditional Waiver of Waste
Discharge Requirements for
Grazing Lands

Regulatory Tools

- Waste Discharge Requirements
- Conditional Waiver of Waste Discharge Requirements
- Discharge Prohibitions

Stakeholder Participation

- Technical Advisory Group
- Public Meetings
- Partnership building

Eligibility for Coverage under Waiver

- Those currently operating or that resume operation within life of the Waiver
- 50 acres or more in size



Special Cases

- Grazing operations smaller than 50 acres that pose threat to water quality
- Dairy facilities already covered under a permit
- Walker Creek Watershed - Mercury



Elements of the Waiver for Grazing Operations

- Eligibility for Coverage
 - Notice of Intent
- Waiver Conditions
 - Waiver Standards
 - Ranch Water Quality Plan
 - Implementation of Management Practices
 - Compliance Monitoring and Reporting
- Termination

ATTACHMENT A
GRAZING WAIVER NOTICE OF INTENT TO COMPLY WITH RESOLUTION NO. R2 2008 (PROPOSED)
FORM MUST BE SUBMITTED TO WATER BOARD BY JANUARY 31, 2009

SECTION A. FACILITY OPERATOR INFORMATION			
Name			Contact E-mail
Mailing Address			
City	State	Zip Code	
Name of Contact Person			Contact Phone

SECTION B. LANDOWNER INFORMATION (if operator is not the owner)			
Name			Contact E-mail
Mailing Address			
City	State	Zip Code	
Name of Contact Person			Contact Phone

SECTION C. FACILITY INFORMATION * Please fill out an additional sheet if Ranch Lands are not contiguous			
A. Facility Name			County
Mailing Address			
City	State	Zip Code	
Name of Contact Person			Contact Phone
Facility Operator's Parcel Number			
F. Precise Latitude and Longitude only if facility does not have a valid street address	D. Description of Facility Latitude	E. District/County	
	Longitude	District/County	
B. Start Date of Use:	C. Operation Type (check one)		D. Start & End Date of Current Operations
1. Cattle	2. Other		
3. Sheep	4. Other (R)		

SECTION IV. ADDRESS FOR CORRESPONDENCE

Waiver Standards

Implement Management Practices to:

- Minimize delivery of sediment, nutrients pathogens and mercury (Walker Creek Watershed)
- Manage ranch roads to prevent erosion
- Manage grazing to eliminate additional erosion from gullies
- Design and manage animal crossings to eliminate polluted runoff

Ranch Water Quality Plan

- Kept on site and available for review
- Map and inventory of physical features
- Inventory of animals on the property
- Detailed description of current and future practices implemented to reduce polluted runoff
- Implementation schedule
- Compliance reporting plan



Compliance Monitoring & Reporting

- Inspections
- Record keeping
- Annual certification

ANNUAL CERTIFICATION & COMPLIANCE MONITORING DOCUMENTATION
(required and must be submitted)

This ranch/farm is in compliance with the Grazing Operations Waiver Program (Conditional Waiver in the Tomales Bay Watershed, RZ-2008-0054).

Farm/Ranch Name:	Phone:
Mailing address or P.O. Box:	City, State and Zip Code:

List all Assessor Parcel Numbers (APNs) or legal description (Township, Range, Section) for each parcel, pasture, or silage field included in this plan:

Ranch Plan (check one)
 A Ranch Water Quality Plan was completed in _____ (year) and will be updated in _____ (year).
 The Ranch Water Quality Plan is expected to be finished in _____ (year).

Compliance Monitoring Inspections (fill in dates of monitoring inspections were completed)
 1) Wet season inspections conducted on: Dec. _____ Jan. _____ Feb. _____
 March _____ April _____
 2) Dry season inspections occurred on: June _____ Sept. _____
 3) Survey of stream(s) below and above ranch facility completed on: _____
 4) Are further management practices needed to improve water quality? Yes No Not Sure

If yes is indicated in question 4, list any new potential water quality projects identified during ranch or stream inspections and describe planned or implemented fixes and any maintenance. Use additional pages if needed.

Date	Location (Pasture/ Field)	Describe Water Quality Concern	Notes (action taken, success, & future needs)

Completed by: Landowner Tenant Other _____
 (Print name) _____
 (Signature) _____ (Date) _____
 Phone #: _____

Make copies for landowner & tenant.
 Mail completed form **before November 15** to:
 San Francisco Bay RWQCB
 1515 Clay Street, Suite 1400
 Oakland, CA 94612
 ATTN: Grazing Operations Waiver Program

Ranch Water Quality Plan & Compliance Monitoring 1

Special Conditions for Walker Creek Watershed

- Grazing operations downstream of Gambonini Mercury Mine
- No mercury cleanup required
- Minimize potential for mercury getting into the Bay
- Contact Water Board staff prior to implementing BMPs in the floodplain

Grazing Waiver Implementation

Of the 424 notifications sent

- 187 Notices of Non-Applicability
- 36 No Response (15%)
- 201 Notices of Intent, &
 - 167 Annual Certifications (83%)

Grazing Waiver Implementation Monitoring Effectiveness

- Site visits to non-response sites
- Announced site visits to facilities under NOI
- Continue work with Partner Agencies
- Baseline WQ Monitoring by RB and other sampling entities.

Key To Success

Watershed-wide partnership to reduce pathogen discharges



THE END





**Table 4-25
Baseline Water Quality Monitoring Program**

Constituent	Location	Frequency	Sampling Entities
Tomales Bay			
Fecal Coliform ^a	California Department Health Services designated primary water quality monitoring stations	Weekly for five weeks beginning in January; Monthly March – December Weekly for five weeks during summer months	Shellfish Growers
Tributaries			
Fecal coliform Stream Flow	Olema Creek (tributary to Lagunitas)	Weekly for five weeks beginning in January; Monthly March - December Weekly for five weeks during summer months	National Park Service
Fecal coliform	West Shore tributaries	Same as above	Inverness Public Utilities District
Fecal coliform	East Shore tributaries	Same as above	Water Board
Fecal coliform Stream Flow	Lagunitas Creek	Same as above	Water Board, Salmon Protection and Watershed Network
Fecal coliform Stream Flow	Walker Creek	Same as above	Water Board

a. *E. coli* monitoring may be used in the future to assess general water quality trends and exceedances. If *E. coli* is used, a Tomales Bay specific correlation factor linking fecal coliform and *E. coli* levels will need to be established.

