CONTRA COSTA
CLEAN WATER
PROGRAM

Thomas E. Dalziel
Program Manager

September 15, 2011

Bruce H. Wolfe, Executive Officer
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Ms. Pamela Creedon, Executive Officer
California Regional Water Quality Control Board
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Dear Mr. Wolfe and Ms. Creedon:

Enclosed is the Contra Costa Clean Water Program Fiscal Year 2010-2011 Annual Report documenting "Group Activities" conducted collectively on behalf of all Contra Costa permittees in accordance with NPDES No. CAS612008 issued by the San Francisco Bay Regional Water Quality Control Board, and NPDES No. CA0083313 issued by the Central Valley Regional Water Quality Control Board.

With the approval and direction from each duly authorized representative of each Permittee, I have been authorized to submit and certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibly of fine and imprisonment for knowing violations.

Sincerely,

Thomas E. Dalziel, Program Manager
Contra Costa Clean Water Program

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Enclosure

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CONTRA COSTA CLEAN WATER PROGRAM

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FISCAL YEAR 2010-2011 ANNUAL REPORT

VOLUME I GROUP ACTIVITIES

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11 – Mercury Controls	11.1	2010/2011 Mercury Collection Amounts

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List of Acronyms

ACCWP	Alameda Countywide Clean Water Program
ABAG	Association of Bay Area Governments
ARRA	American Recovery and Reinvestment Act
BACWA	Bay Area Clean Water Agencies
BAMBI	Bay Area Macroinvertebrate Bioassessment Information Network
BASMAA	Bay Area Stormwater Management Agencies Association
BMI	Benthic Macroinvertebrate
BMP	Best Management Practice
BRMC	BASMAA Regional Monitoring Coalition
BOD	Board of Directors
CASQA	California Stormwater Quality Association
CCC	California Coastal Commission
CCC	Contra Costa County
CCCAG	Contra Costa County Agricultural Commissioner
CCCDAG	Contra Costa County Department of Agriculture
CCCWP	Contra Costa Clean Water Program
CCMAP	Contra Costa Monitoring and Assessment Plan
CCWF	Contra Costa Watershed Forum
CCCSD	Central Contra Costa Sanitary District
CEP	Clean Estuary Partnership
CEQA	California Environmental Quality Act
CPSC	California Product Stewardship Council
CSBP	California Stream Bioassessment Procedures
CWA	Clean Water Act
DCIA	Directly Connected Impervious Area

DCD	Department of Conservation & Development (formerly Community Development Department – CDD)
DDSD	Delta Diablo Sanitation District
DOIT	Department of Information Technology
DPR	Department of Pesticide Regulation
DWR	Department of Water Resources
EBMUD	East Bay Municipal Utility District
EPR	Extended Producer Responsibility
FSURMP	Fairfield-Suisun City Urban Runoff Management Program
FY	Fiscal Year
GIS	Geographical Information System
GBP	Green Business Program
GPS	Global Positioning System
HMP	Hydrograph Modification Management Plan
IDDE	Illicit Discharge Detection and Elimination
IMP	Integrated Management Practice
IMS	Information Management System
IPM	Integrated Pest Management
IRWMP	Integrated Regional Water Management Plan
LID	Low Impact Development
MEP	Maximum Extent Practicable
MBE/DBE	Minority Business Enterprise and Disadvantaged Business Enterprises
MOC	Municipal Operations Committee
MONC	Monitoring Committee
MRP	Municipal Regional Permit
MTC	Metropolitan Transportation Commission
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent

NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PBDEs	Polybrominated Diphenyl Ethers
PCBs	Polychlorinated Biphenyls
PCO	Pest Control Operator
POC	Pollutants of Concern
PEIO	Public Education and Industrial Outreach
PIPC	Public Information/Participation Committee
PMA	Public Managers' Association
POTW	Publicly Owned Treatment Works
PS	Performance Standard
QAQC	Quality Assurance Quality Control
RCD	Resource Conservation District
RMP	Regional Monitoring Program
RN	Referral Notice
RTA	Rapid Trash Assessment
RWQCB	Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SCA	Senate Constitutional Amendment
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SFEI	San Francisco Estuary Institute
SFEP	San Francisco Estuary Partnership
SIC	Standard Industrial Classification
STOPPP	San Mateo Countywide Pollution Prevention Program
SMMP	Streamside Management Master Plan
SMPL	Streamside Management Program for Landowners
SOP	Standard Operating Procedure
SOW	Scope of Work

SWAMP	Surface Water Ambient Monitoring Program
SWMP	Stormwater Management Plan
SWRCB	State Water Resources Control Board
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TRC	Technical Review Committee
UCC	Urban Creeks Council
UCIPM	University of California Integrated Pest Management
UPC	Urban Pesticide Committee
UP3 Project	Urban Pesticide Pollution Prevention Project
USEPA	United States Environmental Protection Agency
USGS	Unites States Geological Survey
WAM	Watershed Assessment and Monitoring
WAP	Watershed Action Program
WOSB	Women Owned Small Business
WCCIWMA	West Contra Costa Integrated Waste Management Authority
WLA	Waste Load Allocation
WN	Warning Notice
WQAC	Water Quality Advisory Committee
WY	Water Year

SECTION 1 – EXECUTIVE SUMMARY

Introduction

The Contra Costa Clean Water Program (CCCWP); consisting of Contra Costa County, its nineteen (19) incorporated cities/towns, and the Contra Costa County Flood Control & Water Conservation District (Flood Control District), is submitting its Fiscal Year (FY) 2010-2011 Annual Report to the San Francisco Bay and Central Valley Regional Water Quality Control Boards (Water Boards) as required in the Joint Municipal National Pollutant Discharge Elimination System (NPDES) Permits. A copy of both permits for the discharge of stormwater runoff from municipal separate sewer systems (MS4s) can be downloaded from the CCCWP website at: http://www.cccleanwater.org/permits.html.

The San Francisco Bay Water Board issued a *Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit* to 76 municipalities throughout the San Francisco Bay Region on October 14, 2009. This permit is hereinafter referred to as the "Municipal Regional Permit" or "MRP". The MRP excludes the cities of Antioch, Brentwood, and Oakley, and the easternmost portions of Contra Costa County and Contra Costa County Flood Control District. These agencies are under the jurisdiction of the Central Valley Water Board. The MRP covers a five-year period, which ends on November 30, 2014.

The MRP is the first "regional" permit issued in the State of California. Before issuance of the MRP, Joint Municipal NPDES Permits were issued on a countywide or individual municipal basis. For the first time, the San Francisco Bay Water Board issued a permit covering an entire region – the San Francisco Bay Region. The MRP covers the 17 public agencies comprising the Alameda Countywide Clean Water Program (ACCWP); 18 of the 21 public agencies comprising the Contra Costa Clean Water Program (CCCWP); the 15 public agencies comprising the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP); the 22 public agencies comprising the San Mateo Countywide Stormwater Pollution Prevention Program (STOPPP); the cities of Fairfield and Suisun City comprising the Fairfield-Suisun Urban Runoff Management

Program (FSURMP); and, the City of Vallejo and the Vallejo Sanitation and Flood Control District. This Annual Report documents activities conducted under the second year of the five-year MRP.

The Central Valley Water Board reissued a Joint Municipal NPDES Permit to the cities of Antioch, Brentwood, Oakley and the easternmost portions of Contra Costa County and the Contra Costa County Flood Control District on September 23, 2010. This Permit expires on September 1, 2015. This Annual Report reviews activities conducted under the first year of this five-year Permit.

As discussed further below, the permit issued by the Central Valley Water Board is substantively identical to that issued by the San Francisco Bay Water Board with the exception of compliance deadlines, which lag the MRP by 1 year. Permittees under the Central Valley Water Board's jurisdiction comply with the permit mandates and timelines outlined in the MRP, which meet or exceed the requirements in the Central Valley permit. Unless specified otherwise, hereinafter all group activities reported below will reference activities conducted by all Contra Costa Permittees in accordance with the MRP.

The MRP, which is 278 pages in length, outlines very prescriptive stormwater management and pollution control mandates to be implemented by Permittees during the five year period. Each Permittee is individually responsible for complying with the mandates; however, the MRP allows, and even encourages, Permittees to collaborate in the design, development, and/or implementation of certain mandates as a group.

The CCCWP's Fiscal Year 2010-2011 Annual Report, Volume I, documents activities implemented by all twenty-one (21) Contra Costa Permittees as a group from July 1, 2010 to June 30, 2011. These group activities are conducted on a countywide basis, and/or on a region-wide basis collectively with the 76 Permittees under the MRP. Activities conducted regionally are coordinated through the Bay Area Stormwater

Management Agencies Association (BASMAA)[1]. CCCWP Permittees choose to conduct a variety of mandated activities as a group to reduce costs, avoid duplication of effort, and facilitate consistent application of requirements countywide and/or region-wide. Decisions regarding group activities for which Contra Costa Permittees choose to conduct and/or participate are made by CCCWP's Management Committee, which is the CCCWP's decision-making body. The Management Committee meets monthly and directs and monitors the implementation of all group activities. The CCCWP operates under a Program Agreement, which was first entered into in 1991 and has been updated several times since. The roles and responsibilities of the CCCWP and its 21 Permittees are outlined in the Program Agreement, which was last updated and adopted by all 21 Permittees in 2010.

In FY 2010-2011, the CCCWP was staffed by four (4) full-time employees and two (2) part-time employees. Five (5) subcommittees review, research and make recommendations to the CCCWP Management Committee on the topics to which they are assigned. Designated CCCWP representatives participate on equivalent BASMAA subcommittees focused on the implementation of regional tasks. Attachments 1.1 and 1.2 outline the CCCWP's organizational structure, its staffing and representatives, and consultant support services. Attachment 1.3 provides a list of Contra Costa Permittee participation and attendance on the CCCWP's five (5) subcommittees. Attendees with voting rights are expected to attend at least 80% of the regularly scheduled meetings.

Activities conducted by individual Contra Costa Permittees in Fiscal Year 2010-2011 are documented in the "Individual Municipal Annual Reports" compiled in Volume II of this report.

[1] BASMAA is a consortium of municipal stormwater programs representing over 90 agencies, including 79 cities and 6 counties. BASMAA was started by local governments in the Bay Area to share information and combine resources to develop products and programs that would be more cost-effective if done regionally. In Fiscal Year 2008/2009, BASMAA reorganized as a 501(c)(3) non-profit organization. This allows BASMAA to enter into contracts and seek grant funds on behalf of its members. BASMAA is focused on regional challenges and opportunities to improving the quality of stormwater that flows to our local creeks, San Francisco Bay and Delta, and the Ocean.

A Year of Unprecedented Challenges and Accomplishments

Funding MRP Compliance

The single most significant challenge facing Permittees is funding compliance activities mandated by the MRP. Unfortunately, the infrastructure improvements and services needed to meet the requirements of the MRP exceed the revenues available to the CCCWP and its Permittees. There is a growing funding gap between municipalities' available stormwater utility assessment revenues dedicated for implementing permit compliance activities, and compliance expenditures required by the MRP. The stormwater utility assessment generated $14 million in FY 2010-2011. Municipalities' existing stormwater utility assessments are at their **maximum** rate, and **cannot be increased** without voter approval in accordance with Proposition 218[2]. No federal or state monies are provided for implementation of the MRP. Permittees are individually responsible for generating sufficient funds for the capital, operation, and maintenance expenditures necessary to implement the MRP mandates. This has put municipalities in an untenable situation. To fill the funding gaps, Permittees have or are exhausting their reserves and/or are relying on other municipal revenues such as their General Fund to ensure MRP compliance. This is occurring at a time of significant losses in General Fund revenues due to dramatic losses in property and sales tax revenues. This loss to local governments' two biggest revenue sources is compounded by the state's "borrowing" and/or taking of local revenues away from local governments to solve the state's budget crisis. Furthermore, help from the federal government is not likely with the nation in the grip of the worst recession since the Great Depression. In this economic climate, Contra Costa Permittees have seen unprecedented reductions in staffing, reductions in salaries and benefits, and reductions in public services and programs provided to their citizens. Local elected officials are faced with agonizing and unpopular decisions about how to use and allocate their limited resources and revenues

[2] Proposition 218 amended the California Constitution (Articles XIIIC and XIIID) which, as it relates to assessments, requires local government to have a vote of the affected property owners for any proposed new or increased assessment before it could be levied. The Proposition was passed by California voters on November 5, 1996.

to continue to provide critical public service needs (e.g., public safety, road maintenance, public facilities operation and maintenance, natural resource protection, etc…). This is a time of unprecedented challenges for Contra Costa Permittees and local governments throughout the state.

In March 2005, when home prices peaked nationwide, the CCCWP could not have predicted the financial crisis that was to come in 2008; however, the CCCWP did predict that municipalities' stormwater utility assessment revenues would no longer be sufficient to fund compliance with the pending adoption of the MRP, which was unprecedented in the State of California. It was certain the MRP would contain many new, prescriptive, and expensive mandates incorporating, among other things:

1) Increased specificity in permit language and requirements (i.e., required actions, specific level of implementation for each action, and detailed reporting and effectiveness evaluation requirements)
2) Enhanced actions to control 303(d) list pollutants, pollutants of concern and adopted Total Maximum Daily Loads (TMDLs)[3];
3) More specific and comprehensive stormwater monitoring, including monitoring for 303(d) listed pollutants; etc…

Beginning in FY 2005-2006, the CCCWP initiated an aggressive effort to address this funding gap. The CCCWP contracted with SCI Consulting Group, Inc. (SCI) to estimate property owner and voter support for establishing a fee to clean-up polluted stormwater and runoff; keep trash and pollution out of rivers, lakes, the Delta and the Bay; prevent flooding; and, protect sources of clean drinking water. The funding mechanism that was considered was a property-related fee. Both telephone and mail ballot surveys were used to determine the feasibility of a "Proposition 218" election, which would require more than a 50% approval of property owners. The surveys showed general support for

[3] Under section 303(d) of the Clean Water Act, states are required to develop lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet the water quality standards set by states. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop TMDLs for these waters. A Total Maximum Daily Load, or TMDL, is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.

an assessment but not at the required level to win approval. Recommended next steps included increased public education and outreach, which were implemented in fiscal years 2006/2007 through 2010/2011, spending approximately $400,000 per year for this effort. The CCCWP also established a reserve fund and begin annually budgeting monies to conduct a comprehensive evaluation of funding needs and options, including a Proposition 218 election, available to local governments once the anticipated MRP was adopted. The cost to conduct a Proposition 218 election was estimated at $1 to $1.5 million.

In FY 2010-2011, the CCCWP retained SCI, through a competitive bid process, to provide public opinion research, fee engineering, balloting and professional consulting services for implementation of a possible Contra Costa stormwater quality funding initiative. This initiative is a multi-phased project (i.e., 3 phases), which includes an important decision point at the conclusion of the first phase (i.e., whether there is public (voter) support for a clean water funding initiative in Contra Costa communities). Each phase is summarized below:

- <u>Phase I</u>
  - *Task 1 – Background Analysis and Research*: Includes "kick-off" meeting with all individuals actively involved in bringing a stormwater revenue measure to ballot, and the collection and analysis of background information (expenditures, sources of funding, past and current MRP and NPDES requirements, etc…).
  - *Task 2 – Future Program Cost Analysis*: Includes a detailed review and analysis of projected future stormwater program annual costs, sources of funding, and a detailed breakdown of expected funding gaps.
  - *Task 3 – Potential Funding Sources Analysis*: Includes an evaluation of a variety of potential additional funding mechanisms and the potential attributes of each (e.g., political viability, legal rigor, future reliability, etc…).
  - *Task 4 – Opinion Research and Survey*: Includes a telephone survey among 800 likely voters, 22,000 mail ballot surveys, and interviews with local government decision makers.

- *Task 5 – Stormwater Funding Needs and Options Report*: A report summarizing the findings of Tasks 1 through 4 and provides recommendations on the most viable revenue enhancement options.

- Phase II
  - *Task 6 – Fee Report*: Preparation of a preliminary and final fee report.
  - *Task 7 – Revenue Enhancement Action Plan*: Preparation of an action plan for implementing the revenue enhancement options selected by the CCCWP.

- Phase III
  - *Task 8 – Implementation and Education Outreach*: Implementation of the revenue enhancement action plan and a countywide property-related fee ballot.

The decision to move forward with Phases II and III will be made by the CCCWP's Management Committee and will be contingent on the findings of the public opinion research. Without sufficient support from Contra Costa property owners for additional revenues for implementation of the federal and state stormwater mandates, local agencies will continue to be faced with difficult choices on how to balance the need for important stormwater quality programs and other vital public services in their communities.

From its inception in 1991, the CCCWP has been a leader in taking the initiative to identify and implement measures necessary to generate dedicated revenues to fund and comply with the federal and state stormwater rules. In 1992, the Contra Costa County Flood Control & Water Conservation District with support from Contra Costa Permittees successfully sponsored legislation referred to as Assembly Bill 2768 (AB 2768), which authorized the District to establish Stormwater Utility Areas within NPDES permitted areas (i.e., cities, towns and unincorporated county areas) and to impose an annual assessment to pay for the costs associated with the implementation of the NPDES permits. Since 1993, the Stormwater Utility Assessments have provided a

dedicated source of revenue for the implementation of the Municipal NPDES permits. Unfortunately, the infrastructure improvements and services needed to meet the requirements of the MRP exceed both the maximum rate allowed to levee the assessment and current dedicated revenues. The CCCWP's 2012 stormwater quality funding initiative, which was started in 2005, will be the first ever region-wide, property-related fee ballot measure implemented for funding municipal NPDES stormwater mandates in the State of California. Faced with the unprecedented fiscal challenges facing local governments to fund vital public services, including NPDES Permit compliance, the CCCWP and its Permittees are extremely proud of our innovated and proactive efforts to plan, develop, and potentially conduct a "*2012 Community Clean Water Initiative"*.

Regional Collaboration for Stormwater Quality

The adoption of the MRP in October 2009 was unprecedented in the State of California and the nation. The MRP consolidated six (6) Phase I municipal stormwater permits into one consistent permit. The MRP incorporated details contained in each of the previous individual countywide permits, and added more specifics detailing: (a) the required activities; (b) how much of each activity is required; and, (c) reporting and effectiveness evaluation requirements for each activity. It added actions to address 303(d) listed pollutants and TMDL Waste Load Allocations. The MRP also included more specific and comprehensive stormwater monitoring, including monitoring for 303(d) listed pollutants. The MRP represented the most comprehensive, prescriptive, and stringent permit mandates adopted in the state. Permittees under the MRP faced a plethora of new permit mandates requiring unprecedented levels of stormwater knowledge and expertise, strategic planning, and aggressive timelines for implementation.

The CCCWP restructured its committees to better meet the mandates of the MRP in FY 2009-2010. This restructuring was formalized and incorporated into an updated Program Agreement that all 21 Permittees adopted in 2010. The Program's restructuring was coordinated with the restructuring of BASMAA and its committees.

This provided an equivalent forum for appropriate Contra Costa Permittee representatives to engage other MRP Permittees to discuss and share common issues and solutions, and to identify permit mandates that might best be implemented regionally. Conceptually, regional collaboration makes sense; however, in reality it is often extremely challenging and time intensive to reach consensus or a decision among stormwater professionals representing a wide range of community types and characteristics. For example, BASMAA represents communities ranging in population from over one (1) million to less than 3,500. Some communities have a broad mix of industrial, commercial and residential land uses, while others are rural residential. A wide variety of other factors must often be considered in the process of regional collaboration. Developing and implementing an agreed-to-process and method for identifying, planning, funding and implementing regional projects can help. BASMAA has adopted policies and procedures for budgeting and work planning; consultant selection and contracting; document management; funding and accounting for BASMAA efforts (i.e., regional efforts); and, project management and project deliverable approval.

The BASMAA Board of Directors have committed to an annual review of these newly adopted policies and procedures to evaluate what is working and not working, and to make continuous improvements. The first review is set to occur at the conclusion of this fiscal year (after June 30, 2011). Despite the inherent challenges of regional collaboration, MRP Permittees successfully worked together to complete all its projects and objectives established for FY 2010-2011. Working collaboratively with local agencies throughout the San Francisco Bay Region, municipalities are pooling their resources and expertise to comply with these mandates in the most effective and efficient way possible. Representatives of the CCCWP played a significant role in these accomplishments, some of which are briefly highlighted below:

New Development and Redevelopment

The CCCWP has been a leader in the development and implementation of Low Impact Development (LID) in new development projects since 2005. CCCWP staff and consultants, and designated staff from local municipalities provided considerable

assistance and leadership in the development of various Provision C.3 submittals made regionally in FY 2010-2011. The following table notes the submittals required and CCCWP's role within BASMAA:

Submittal	**Provision/Date**	**CCCWP Role during 2010-2011**
Special Projects/LID Treatment Reduction Credits	Provision C.3.e.ii. December 1, 2010	CCCWP drafted BASMAA's proposal and revised it to obtain BASMAA consensus
Model Bioretention Soil Media Specifications	Provision C.3.c.iii.(3) December 1, 2010	CCCWP acted as Project Officer for BASMAA. BASMAA retained WRA, Inc., to update the bioretention soil specifications that firm had previously prepared for Contra Costa. CCCWP prepared the cover letter submitting WRA's updated specifications to the Water Board. In response to Water Board staff requests, CCCWP drafted a BASMAA perspective on public comments on this submittal.
Green Roofs Minimum Specifications	Provision C.3.c.iii.(4) May 1, 2011	CCCWP drafted BASMAA's submittal and incorporated comments from BASMAA Permittees to obtain BASMAA consensus.
Harvest and Use, Infiltration, and Evapotranspiration Feasibility/Infeasibility Criteria Report	Provisions C.3.c.i.(2) and C.3.c.iii.(1). May 1, 2011	CCCWP drafted the project scope for BASMAA use. CCCWP also redrafted portions of the submittal as needed to incorporate CCCWP concerns.
Report on Implementation of Green Streets	Provision C.3.b.iii. September 15, 2013	CCCWP drafted an RFP for a consultant to collect data on green streets and to prepare the report. CCCWP then incorporated comments on the RFP to obtain BASMAA consensus.

Further details regarding the above regional activities are provided in "Section 3 – New Development and Redevelopment" of this report.

<u>CCCWP Participation/Representation on BASMAA's Committees</u>

The CCCWP's Program Agreement institutionalizes Contra Costa Permittees' active participation in and representation on BASMAA's regional activities and committees,

respectively. This decision, made in 2009, was deliberate and intended to ensure BASMAA's goals, objectives and scopes of work adequately meet the needs of municipal Permittee staff, which are responsible for the day-to-day implementation of the MRP mandates. The tools, guidance, and policies developed regionally must be practical, implementable, and effective at the local level. In FY 2010-2011, CCCWP representatives designated to represent all Contra Costa Permittees on BASMAA committees were as follows:

BASMAA Committee	CCCWP Representation
Development	Dan Cloak (CCCWP Consultant) David Swartz (Contra Costa County) Frank Kennedy (City of Oakley) Tom Dalziel (CCCWP Staff)
Municipal Operations	Rinta Perkins (City of Walnut Creek) Tim Harless (City of Pinole) Elisa Wilfong – Chair (CCCWP Staff)
Monitoring / Pollutants of Concern	Khalil Abusaba (CCCWP Consultant) Armand Ruby (CCCWP Consultant) Alfredo Hurtado (City of Pittsburg) Lynne Scarpa (City of Richmond) Jamison Crosby (CCCWP Staff)
Trash	Rinta Perkins (City of Walnut Creek) Tim Harless (City of Pinole) Elisa Wilfong (CCCWP Staff)
Public Information / Participation	Steven Spedowfski – Chair (City of San Ramon) Dan Jordan (Contra Costa County) Michelle McCauley (CCCWP Staff)

Conclusion

FY 2010-2011 has been an immensely challenging year for the CCCWP. Additional challenges not detailed above included negotiating the reissuance of a Joint Municipal NPDES Permit for the cities of Antioch, Brentwood, and Oakley, and the easternmost portions of Contra Costa County, and the Contra Costa County Flood Control District.

This process was initiated in late FY 2009-2010, and concluded in FY 2010-2011 with the adoption of the East Contra Costa Municipal NPDES Permit on September 23, 2010. CCCWP staff and consultants, and East County Permittees were focused on this effort throughout the summer of 2010. The CCCWP's primary objective was to ensure the East County Permit was coordinated and consistent with the MRP. Another significant challenge not discussed above was the resignation of the Program's clerical Kristen Hardeman in September 2010. Ms. Hardeman had been with the CCCWP for ten years and was an invaluable asset. The CCCWP has been unsuccessful in its efforts to permanently fill the position vacated by Ms. Hardeman. This effort will continue next fiscal year. The CCCWP was also impacted by the maternity leave of absence of one its full time employees from July to December 2010.

Despite funding challenges, coordinating multiple NPDES permits, staffing challenges, and the challenges of complying with a whole plethora of prescriptive and technically complex mandates outlined in the 278 page MRP, the CCCWP successfully accomplished all its mandated requirements for FY 2010-2011. These accomplishments are detailed in this Annual Report, which includes the Individual Municipal Annual Reports compiled in Volume II, and BASMAA's regional supplemental reports submitted separately by BASMAA on behalf of Contra Costa Permittees. Through the extraordinary efforts of dedicated CCCWP and Permittee staff, Contra Costa Permittees continue to maintain their commitment to continuous improvement and innovation.

SECTION 2 – PROVISION C.2 MUNICIPAL OPERATIONS

Introduction

The CCCWP Municipal Operations Committee (MOC) is comprised of Contra Costa municipal representatives and CCCWP staff. The MOC is responsible for review and development of countywide guidance and training on stormwater pollution prevention activities for municipal maintenance activities, commercial/industrial inspection programs, illicit discharge control activities, and trash load reduction activities mandated in our stormwater permits. Designated representatives of the CCCWP MOC and CCCWP staff also participate on the Bay Area Stormwater Management Agencies Association (BASMAA) MOC, which coordinates similar activities implemented regionally.

The CCCWP MOC meets every fourth Thursday of the month. The BASMAA MOC meets every third Thursday of the month. For a listing of Contra Costa municipal representatives on the CCCWP MOC and BASMAA MOC, see Attachment 1.3.

This section highlights countywide and regional implementation of stormwater pollution prevention activities for municipal maintenance activities. Any countywide and regional activities related to commercial/industrial inspection programs, illicit discharge control activities, pesticide toxicity control, and trash load reduction activities are contained in Sections 4, 5, 9, and 10, respectively.

Accomplishments

Although the majority of the CCCWP's MOC attention focused assisting municipalities in meeting the Provision C.4 Industrial Commercial Site Controls, C.9 Integrated Pest Management and Provision C.10 Trash Load Reduction requirements, the MOC did provide an effective forum for assisting and coordinating countywide and regional implementation of the following Provision C.2 Municipal Operations mandates:

1. Corporation Yard BMP Implementation
2. Stormwater Pump Station Monitoring
3. BMPs for Mobile Cleaning Operations

A summary review of each of these activities is provided below:

Corporation Yard BMP Implementation

The CCCWP MOC members conducted several discussions focused on compliance with the corporation yard BMPs. Committee members reviewed and discussed: 1) methods for designing vehicle and equipment wash areas that prevent non-stormwater discharges to storm drains; 2) proper storage of toxic chemicals such as pesticides and vehicle fluids; 3) monitoring required for Notice of Intent (NOI) facilities covered under the Industrial General Permit; and, 4) the proposed requirements contained in the draft Industrial General Permit, which is out for public review and comment. These discussions were helpful and guided MOC members to design new BMPs for their corporation yards. The CCCWP MOC continues to be an effective forum for municipal operations staff to share corporation yard pollution prevention challenges and solutions.

Stormwater Pump Station Monitoring

The CCCWP MOC, in coordination with the BASMAA MOC, developed an example pump station inspection form to assist Permittees in their inspections and collection of dissolved oxygen (DO) data from all applicable pump stations they own and operate. At monthly CCCWP MOC meetings, municipal representatives shared challenges and lessons learned in their compliance with the stormwater pump station monitoring requirements.

BMPs for Mobile Cleaning Operations

BASMAA's Mobile Surface Cleaner Program is a training and certification program for individual mobile surface cleaners to implement Best Management Practices (BMPs).

Municipalities hire only BASMAA certified mobile surface cleaners, or use trained in-house staff, for surface pavement washing of public facilities, and require implementation of the BMPs in BASMAA's Mobile Surface Cleaner Program by private businesses. This effort has been ongoing for many years and is consistent with Provision C.2.b. "Sidewalk/Plaza Maintenance and Pavement Washing".

Historically, the surface cleaning certification program addressed the cleaning of surface pavement (e.g., parking lots, plazas, and sidewalks). The CCCWP MOC in coordination with the BASMAA MOC is expanding the program to include other mobile cleaners such as carpet cleaners, mobile auto detailers and auto body workers, mobile pet cleaners, mobile food providers, and other mobile businesses in accordance with Provision C.5.d. "Control of Mobile Sources". During FY 2010-2011, a consultant was procured for the program expansion and the search is underway to procure a consultant for producing new segments of the training video. This effort will be completed in FY 2011-2012.

Conclusion

The CCCWP's MOC continues to be an effective forum for sharing information and developing guidance and training to assistance all municipalities with implementation of effective municipal operations BMPs. Representatives of the CCCWP's MOC continue to actively participate in the development of regional guidance and training with the BASMAA MOC. The strength and direct involvement of municipal operations practitioners in both committees is critical to ensure the guidance and training is implementable and cost effective.

In Fiscal Year 2011-2012, CCCWP's MOC will continue to identify opportunities to coordinate and assist municipal operations staff with implementation of consistent and effective BMPs consistent with the mandates in Provisions C.2 (Municipal Operations), C.4 (Industrial Commercial Site Controls), C.5 (Illicit Discharge Detection and Elimination), C.9 (Pesticide Toxicity Control) and C.10 (Trash Load Reduction).

SECTION 3 – PROVISION C.3 NEW DEVELOPMENT AND REDEVELOPMENT

Introduction

Provision C.3, New Development and Redevelopment, was the most controversial new provision when the San Francisco Bay Regional Water Quality Board (Water Board) adopted the Municipal Regional Permit on October 14, 2009. Because of this controversy, Water Board staff chose to delay decision on some key permit requirements for resolution during the permit term. These requirements are the subject of submittals made to the Water Board by the Permittees during Fiscal Year (FY) 2010-2011.

During the MRP negotiations (2006-2009), the CCCWP sought to limit the disruptions and potential confusion in CCCWP implementation that could result from changes to C.3 requirements in the MRP. Because the Water Board delayed deciding on key requirements, CCCWP's efforts have continued to focus on this objective during the past fiscal year.

Condensed Timeline of Contra Costa's LID Implementation 2003-2010

The CCCWP has pursued an innovative LID-oriented approach to implementing source control, treatment, and hydrograph modification management since 2003. Following is a condensed timeline of activities and accomplishments:

2002-2003: In a February 2003 amendment, the Water Board added new C.3 Provisions to the countywide stormwater permit.

2003-2004: To implement the requirements of new C.3 Provisions, the CCCWP established a C.3 Oversight Committee, a Planning and Permitting Work Group, a Legal Work Group, a Technical Work Group, and a Capital Improvement Projects Work Group. These work groups were assisted by CCCWP staff and consultants. The work

groups established an LID-oriented approach to stormwater treatment and recommended key policies, including the requirement to submit a Stormwater Control Plan with applications for planning and zoning approvals. Assisted by the CCCWP's C.3 consultant, the work groups drafted key documents, including the first edition of the *Contra Costa Clean Water Program Stormwater C.3 Guidebook,* which provides guidance for preparing a Stormwater Control Plan. The work groups also produced a Vector Control Plan and a work plan to prepare a Hydrograph Modification Management Plan (HMP) as required by the permit.

2004-2005: The CCCWP conducted an "early outreach" survey of business and community leaders and held a half-day workshop on Provision C.3 in July 2004. CCCWP staff prepared a "Checklist for Local C.3 Implementation," created a C.3 web page to make CCCWP-created resources available to the public, and prepared a second edition of the *Stormwater C.3 Guidebook.* The CCCWP also completed an analysis of changes to development standards needed to implement Provision C.3. The Legal Work Group drafted a model ordinance that was adopted, with minimal changes, by Contra Costa County and each of its 19 cities and towns. The ordinances each reference the "latest edition" of the *Stormwater C.3 Guidebook* and provide the basis for a remarkable countywide consistency in stormwater policies for land development. The CCCWP submitted a draft HMP as required on November 15, 2004 and obtained Water Board staff comments on the draft five months later on April 17, 2005. The CCCWP submitted the final HMP as required on May 15, 2005.

2005-2006: The CCCWP spent much effort during this year assisting Water Board staff to review the final HMP. The CCCWP also produced policies on C.3 compliance for subdivisions and on the use of hydrodynamic separators to achieve compliance with Provision C.3. These policies were later incorporated into the *Stormwater C.3 Guidebook.*

2006-2007: The Water Board adopted a permit amendment incorporating the HMP on July 12, 2006. By that October, the CCCWP had begun implementation of the HMP.

Preparation included production of calculation methods for sizing bioretention areas and other integrated management practices (IMPs) for HMP compliance as well as stormwater treatment. The calculation methods and factors were incorporated into the first version of the CCCWP's IMP Sizing Calculator. In early 2007, CCCWP staff and consultants led a design charrette with land development engineers, developers, and municipal staff involved in development review. The purpose of the charrette was to assist developers to incorporate LID by refining IMP designs and creating new IMP designs. The CCCWP also sponsored a March 2007 roundtable of municipal engineers, attorneys and other staff to better address issues related to ensuring operation and maintenance of stormwater treatment facilities.

2007-2008: The CCCWP's Legal Work Group followed up the roundtable by producing a set of model agreements and provisions for Codes, Covenants, and Restrictions to be used for subdivisions with stormwater management facilities. The C.3 Implementation Work Group (the product of the consolidation of the Planning and Permitting and Technical Work Groups) developed a draft of the *Stormwater C.3 Guidebook,* 4th Edition. The new draft substantially revamped the guidance, enhancing the focus on LID and including additional recommendations and requirements for the design and construction of bioretention facilities.

2008-2009: As in previous fiscal years, a considerable portion of the CCCWP's resources were devoted to interactions with Water Board staff, including the permittee's review of Water Board staff's draft MRP language, preparation of responses and comments, and preparation and delivery of oral testimony, including that at the May 13, 2009 public hearing. The CCCWP published the 4th Edition of the *Stormwater C.3 Guidebook,* completed the design and development of sizing factors for two new IMPs, and sponsored a workshop on Planning, Design and Construction of LID IMPs. A second workshop, including training on the updated IMP Sizing Calculator, was delayed at the request of Water Board staff. The CCCWP also completed a new Appendix B (Guidance on Soils, Plantings, and Irrigation for Bioretention Facilities) to the *Stormwater C.3 Guidebook.* CCCWP staff subsequently worked with two soil suppliers

to obtain samples and test results in accordance with the requirements in Appendix B. Using construction inspection cards developed in the cities of Walnut Creek and San Pablo, the CCCWP C.3 Implementation Work Group developed a model form to guide municipal construction inspections of bioretention facilities.

2009-2010: Following the May 13, 2009 public hearing on the MRP, Water Board staff produced a “revised tentative order” adding some wholly new C.3 requirements. CCCWP staff, consultants, and local staff worked through September preparing comments and negotiating with Water Board staff. Following adoption of the MRP in October, the CCCWP developed and distributed memoranda and a fact sheet on the changes. CCCWP consultants completed design criteria and sizing factors for two new IMPs to achieve hydrograph modification management as well as stormwater treatment. Design sheets and a complete table of factors and equations for sizing IMPs were incorporated in an October 2009 supplement to the 4th Edition. A revised and much-improved version of the IMP sizing calculator was unveiled at a training session in Walnut Creek. CCCWP staff and consultants drafted the *Stormwater C.3 Guidebook, 5th Edition* and distributed it for municipal staff comment. Participation in an April roundtable on soil specifications for bioretention per MRP Provision c.3.c.ii.(3) led to a BASMAA decision to base the regional specifications on the Contra Costa specifications developed in 2008-2009.

Accomplishments

The CCCWP 2010-2011 C.3 Work Plan was guided by the following objectives:

- Facilitate member agencies’ compliance with MRP Provision C.3.
- Facilitate implementation of permanent controls on new developments in Contra Costa County.
- Organize and implement all required C.3 group activities and submittals.
- Integrate new MRP requirements into existing training and guidance.
- Negotiate permit requirements and interpretations that protect water quality and

are implementable and cost-effective.

- Continuously improve CCCWP outreach and guidance.
- Continue CCCWP's regional and statewide role as an exemplar and leader in C.3 implementation.

Following is a review of FY 2010-2011 accomplishments:

Assistance to Bay Area Stormwater Agencies Association

CCCWP staff and consultants, and staff from local municipalities, worked throughout 2010-2011 to ensure required submittals developed jointly by BASMAA—representing 76 agencies in five counties that are subject to the MRP—did not conflict with or undermine Contra Costa municipalities' ongoing efforts to implement Low Impact Development (LID) in new developments.

The following table notes the submittals required and CCCWP's role within BASMAA:

Submittal	**Provision/Date**	**CCCWP Role during 2010-2011**
Special Projects/LID Treatment Reduction Credits	Provision C.3.e.ii. December 1, 2010	CCCWP drafted BASMAA's proposal and revised it to obtain BASMAA consensus
Model Bioretention Soil Media Specifications	Provision C.3.c.iii.(3) December 1, 2010	CCCWP acted as Project Officer for BASMAA. BASMAA retained WRA, Inc., to update the bioretention soil specifications that firm had previously prepared for Contra Costa. CCCWP prepared the cover letter submitting WRA's updated specifications to the Water Board. In response to Water Board staff requests, CCCWP drafted a BASMAA perspective on public comments on this submittal.
Green Roofs Minimum Specifications	Provision C.3.c.iii.(4) May 1, 2011	CCCWP drafted BASMAA's submittal and incorporated comments from BASMAA permittees to obtain BASMAA consensus.
Harvest and Use,	Provisions C.3.c.i.(2)	CCCWP drafted the project scope for

Infiltration, and Evapotranspiration Feasibility/Infeasibility Criteria Report	and C.3.c.iii.(1). May 1, 2011	BASMAA use. CCCWP also redrafted portions of the submittal as needed to incorporate CCCWP concerns.
Report on Implementation of Green Streets	Provision C.3.b.iii. September 15, 2013	CCCWP drafted an RFP for a consultant to collect data on green streets and to prepare the report. CCCWP then incorporated comments on the RFP to obtain BASMAA consensus.

CCCWP staff and consultants and local municipal staff from Concord and unincorporated County attended frequent meetings and discussions with BASMAA and with Water Board staff throughout the year as these submittals were prepared and the review process begun.

CCCWP aims to limit the MRP's disruption to CCCWP's ongoing efforts to facilitate LID implementation in Contra Costa developments. CCCWP was moderately successful in that many aspects of MRP Provision C.3 codify practices already adopted by Contra Costa municipalities. During 2010-2011, CCCWP was able to carry forward this trend by taking the lead in crafting BASMAA's submittals to the Water Board. In addition, CCCWP staff and municipal staff were able to continuously improve their implementation of new development and redevelopment controls while also working on the MRP.

However, coordination with permittees in other counties and interaction with Water Board staff requires a significant amount of staff time and resources that would otherwise be available to improve the implementation of LID on new developments in Contra Costa.

Stormwater C.3 Guidebook 5th Edition (MRP Edition)

In March 2010, the CCCWP's Development Committee directed the *Stormwater C.3 Guidebook* be updated to:

- Comply with the Municipal Regional Permit (MRP).
- Consolidate and incorporate changes made since the 4th Edition was published in October 2008.
- Make additional changes as part of the continuous improvement process.

The May 2010 draft *Stormwater C.3 Guidebook, 5th Edition* included an approach to compliance with MRP LID requirements for prioritizing the use of infiltration, evapotranspiration, and harvesting and use. This approach was shared with the staff and consultants for other BASMAA countywide programs in a July 2010 meeting, and proved to be influential in the crafting of BASMAA's proposal some months later.

The 5th Edition, published in October 2010, includes:

- An updated table incorporating MRP changes to C.3 applicability.
- Background explaining the CCCWP's technical approach to compliance with various MRP requirements.
- An updated Stormwater Control Plan checklist.
- The addition of a fifth "LID Strategy" to store runoff and use it later for irrigation or other non-potable use.
- Two additional Integrated Management Practices (IMPs, the two are Cistern + Bioretention, and Bioretention + Vault) from the 2009 supplement to the 4th Edition
- Upgrades to design sheets with illustrations and refined criteria, and addition of design sheets for the new IMPs, including new cross-sectional illustrations and design details for bioretention facility outlets.
- A new chapter incorporating minimum standards for construction plan submittals for IMPs, and an IMP construction checklist (developed by CCCWP in 2008-2009).
- Incorporation of Appendix B, "Soils, Planting, and Irrigation," previously published as a stand-alone document in January 2009.

Training for Land Development Professionals and Municipal Reviewers

The CCCWP sponsored a workshop, "Planning, Design, and Construction of Low Impact Development Facilities" on May 23, 2011. The workshop was held at the Centre Concord (Clayton Road and Ygnacio Valley Road) from 8:30 until 3:30. About 100 attended. The purpose of the workshop was to provide Contra Costa land development professionals and municipal staff reviewers with an update on MRP changes to C.3 requirements. The workshop also introduced the CCCWP's *Stormwater C.3 Guidebook, 5th Edition.*

CCCWP consultant Dan Cloak provided presentations on the MRP and the *Guidebook* and also covered the design of LID features and facilities, including lessons learned from recent Contra Costa projects. Uri Elihu of ENGEO consultants led a discussion of geotechnical concerns related to stormwater infiltration. Scott Wikstrom, City of Walnut Creek, presented an analysis of requirements and designs for the soil media mix in bioretention facilities. Vince Lattanzio of Carducci and Associates showed various examples of successful plant palettes used in bioretention facilities.

The workshop was well-received. CCCWP staff used an on-line service to record registrations, which eased on-site check-in. About 50 of the participants subsequently completed an on-line survey.

CCCWP staff emailed Water Board staff with an invitation to attend. None responded.

Negotiation of Requirements in the Region 5 NPDES Permit

As FY 2010-2011 begun, staff at the Central Valley Regional Water Quality Control Board (Region 5 Water Board) had just issued a draft permit covering Antioch, Brentwood, Oakley, and the easternmost portions of unincorporated Contra Costa County and the Contra Costa County Flood Control and Water Conservation District. In negotiating revisions to the draft permit, CCCWP sought to: (1) Make implementation of

BMPs consistent throughout the County; (2) Coordinate monitoring and research requirements so that the East County municipalities' contributions to Bay Region studies mandated by the MRP could be credited to compliance with the Region 5 permit; and, (3) Coordinate submittal and review of studies and reports so that action by the Boards would be sequential rather than simultaneous. The last point was especially important with regard to Provision C.3. These objectives were met by the revised permit adopted by the Region 5 Water Board on September 23, 2010.

HMP Model Calibration and Validation Plan Implementation

CCCWP staff and consultants worked with City of Pittsburg staff to adapt the design of treatment-and-flow-control IMPs at a Fire Protection District office building on Loveridge Road. Adaptations were necessary to ensure outflow from the IMPs could be monitored during high-flow runoff events. The building and IMPs are under construction. Beginning with the 2011-2012 winter season, the discharge from three (3) IMPs will be monitored using tipping buckets.

City of Walnut Creek staff identified a private development project suitable for modeling and monitoring of IMP discharges. The townhouse development features two IMP + Vault systems for treatment and flow control. The development and IMPs are under construction. Beginning with the 2011-2012 winter season, the discharge from the two (2) IMPs will be monitored using magnetic meters.

Each of the sites will be equipped with a rain gauge. All data will be collected in dataloggers and transmitted via Contra Costa County Flood Control and Water Conservation District remote data links. In the coming years, CCCWP's consultants will document each IMP and associated tributary area and will develop an HSPF model to simulate runoff and IMP operation and to predict hourly discharges through IMP underdrain orifices. To gain insight into model assumptions, the predicted hourly discharges will be compared to measured hourly discharges.

Revisions to Model Ordinance

A subcommittee of the CCCWP Development Committee was formed to review the current model ordinance. The current model ordinance was adopted, with minor revisions, by each Contra Costa municipality in late 2004 and early 2005. That model incorporated provisions to facilitate implementation of the then-new "C.3" requirements for new developments. The current review will facilitate implementation of MRP changes to C.3, as well as changes to some other permit provisions. CCCWP Manager Tom Dalziel reconvened a Legal Work Group, which includes attorneys, engineers, and stormwater staff working for member municipalities. However, because of the press of other business (largely related to submittals required by the MRP) the Legal Work Group was not able to complete the revisions to the model ordinance during 2010-2011.

Coordination and Assistance to Local C.3 Implementation

The CCCWP Development Committee (DC) met monthly throughout 2010-2011, except during August, December, and April. David Swartz, Stormwater Coordinator for unincorporated Contra Costa County, served as DC chair. Frank Kennedy, representing Concord, served as DC vice-chair. David served as CCCWP's representative to the BASMAA Development Committee, and Frank served as alternate.

The CCCWP DC provides a vital forum for staff active in the implementation of LID to share experiences and contribute to the continuous improvement of LID guidance and LID practice in Contra Costa. For example, following major storms during the 2010-2011 winter, participants were able to share their observations of LID facility performance at recently built facilities.

In an October 2010 presentation to the Contra Costa City/County Engineering Advisory Committee, and in a February 22, 2011 memorandum provided to municipalities, it was recommended they keep a running tally of impervious surfaces subject to "green streets" projects, projects that remove impervious surfaces (such as traffic calming and

urban greening projects) and drainage retrofits that disperse runoff to landscape or divert existing storm drain systems to bioretention facilities. Municipalities will draw from this “bank” of impervious area to credit public and private development projects with off-site treatment credits.

Regional and Statewide Leadership

During 2010-2011, new LID mandates in California municipal stormwater permits brought much attention to CCCWP’s experience in LID implementation. Contra Costa’s *Guidebook* and LID approach are being emulated by municipalities in Riverside and San Diego Counties.

CCCWP staff and consultants provided presentations and answered questions at the following events around California:

- CCCWP Manager Tom Dalziel and Consultant Dan Cloak provided presentations, “Adapting Policies and Codes to Facilitate Low Impact Development,” and “LID Design and Construction” at a LID Workshop sponsored by the American Basin Council Watersheds in Loomis October 6, 2010.

- CCCWP Consultant Dan Cloak provided a presentation, “Low Impact Development, New Stormwater Quality Requirements for Development Approvals,” to a meeting of the American Council of Engineering Companies East Bay Section on October 6, 2010.

- CCCWP Consultant Dan Cloak provided a presentation, “Meeting the 2011 Harvesting and Use Mandate Today,” at the California Stormwater Quality Association’s (CASQA’s) annual conference in Rancho Mirage on November 2, 2010.

- CCCWP Manager Tom Dalziel and Consultant Dan Cloak provided a

presentation, “Green Streets: What’s Driving Them and Bumps in the Road,” and participated in a panel discussion at a Green Streets Forum in El Cerrito sponsored by the San Francisco Estuary Project on Feb 16, 2011.

Conclusion

The CCCWP fulfilled its 2010-2011 objectives for C.3 implementation. In particular, CCCWP staff and municipal staff worked together closely and effectively to limit and manage the ongoing potential for disruptions and confusion created by the MRP LID requirements and especially by the protracted process of policy development mandated within the MRP.

Economic conditions greatly reduced the number of development projects being planned and built in Contra Costa; however, projects that are underway are consistently implementing LID where required, and the quality and consistency of LID design and construction continues to improve.

CCCWP’s C.3 Work Plan for 2011-2012 is guided by the same objectives:

- Facilitate member agencies’ compliance with MRP Provision C.3.
- Facilitate implementation of permanent controls on new developments in Contra Costa County.
- Organize and implement all required C.3 group activities and submittals.
- Integrate MRP requirements and BASMAA MRP submittals into existing training and guidance.
- Negotiate permit requirements and interpretations that protect water quality and are implementable and cost-effective.
- Continuously improve CCCWP outreach and guidance on new development controls.
- Continue CCCWP’s regional and statewide role as an exemplar and leader in implementation of new development controls.

SECTION 4 – PROVISION C.4 INDUSTRIAL AND COMMERCIAL SITE CONTROLS

Introduction

Municipalities have implemented industrial and commercial site controls through facility inspections and enforcement since the inception of the CCCWP in 1993. The municipalities in Contra Costa conduct stormwater business inspection programs using a variety of resources. In FY 2010-2011, business inspections for the cities of Antioch, Clayton, Concord, El Cerrito, Hercules, Lafayette, Martinez, Orinda, Pittsburg, Pleasant Hill, Richmond, and San Ramon, and the Towns of Danville and Moraga were conducted under the CCCWP's Inspection Service Contract with local sanitary district (or Publicly Owned Treatment Works (POTW)) inspectors. This institutional arrangement of using local POTW inspectors to conduct municipal stormwater inspections was initiated soon after the CCCWP was issued its first Joint Municipal NPDES Permit in 1993. This innovative program was designed to "piggy-back" stormwater inspection services onto the ongoing pre-treatment inspections conducted by experienced and existing POTW inspectors for many years. This arrangement was praised by staff of the San Francisco Bay Water Board and has served as a model for other municipalities throughout California. Business inspections conducted by contracted POTW inspectors with the CCCWP's Inspection Service Contract are referred to in this Annual Report collectively as the "Group Inspection Program". The CCCWP provides administrative support to the Group Inspection Program. This includes management of the contracts, agreements, invoices and reporting, and assistance in review and development of annual inspection plans and goals. The cities of Brentwood, Oakley, Pinole, San Pablo, and Walnut Creek, and Contra Costa County currently conduct their own business inspection programs.

The CCCWP's Municipal Operations Committee (MOC), as discussed previously in Section 2, meets monthly and provides a forum for coordinating, among other things, consistent and effective business inspection programs. Designated CCCWP MOC representatives participate on the BASMAA's MOC, which provides a forum for addressing tasks best implemented regionally.

Accomplishments

Following is a list of accomplishments conducted by the CCCWP's MOC to assist permittees with implementation of the mandates in Provision C.4:

1. Conducting monthly CCCWP MOC meetings and participating in BASMAA's MOC;
2. Administering the CCCWP's Stormwater Inspection Service Contract for the Group Inspection Program;
3. Updating the Model Enforcement Response Plan (ERP) and Model Business Inspection Plan;
4. Hosting two (2) Inspector Training workshops;
5. Supporting and participating in the Contra Costa Green Business Program; and,
6. Providing outreach to the business community.

The following is a detailed account of each activity listed above:

Conducting Monthly MOC Meetings and Participation on BASMAA's MOC

The CCCWP MOC is tasked with, among other things, development of countywide guidance and training to assist municipalities with implementation of their industrial commercial site control program in accordance with Provision C.4. During FY 2010-2011, the CCCWP MOC's devoted significant staff time and resources to assist municipalities with C.4 compliance. This included administering the group program inspection program, updating the Model ERP and Model Business Inspection Plan, conducting training for stormwater inspectors, supporting the Contra Costa Green Business Plan, and developing a new restaurant outreach brochure. A summary of these efforts are discussed below.

Administering the CCCWP's Stormwater Inspection Service Contract for the Group Inspection Program

CCCWP staff manages the inspection contract between the fourteen (14) municipalities involved in the "Group Inspection Program" and three local POTWs - Central Contra Costa Sanitary District (CCCSD), Delta Diablo Sanitary District (DDSD), and East Bay Municipal Utility District (EBMUD). Management of the contract includes administrative oversight of the contract billing, review of inspection goals and MRP compliance concerns, training of inspectors for consistent inspection services, and field support to inspectors and municipal staff when needed. CCCWP staff meets with the participating municipalities annually to assess the services provided, set goals for the upcoming fiscal year, and reviews any special issues or enforcement problems that have occurred.

After a review of the Provision C.4 permit requirements, CCCWP staff has determined that inspection programs managed by the CCCWP's contract are consistent with the MRP. The inspection programs already include: a) the list of facilities suggested as potential stormwater polluters; b) an enforcement structure to address non-compliant businesses; and, c) careful review of industrial sites that may require coverage under the State's Industrial General Permit. No new activities were needed to be compliant with the MRP except updating the Model ERP and Model Business Inspection Plan, which is discussed below.

Updating the Model Enforcement Response Plan (ERP) and Model Business Inspection Plan

In response to the inspection program audits conducted by the San Francisco Bay Water Board staff during FY 2010-2011, the CCCWP updated its Model ERP and Model Business Inspection Plan. The inspection program audits concluded the following findings:

1. The CCCWP's Model Business Inspection Plan was outdated and did not include the new MRP requirements for inspection activities;
2. Some terms in the Model ERP were not clearly defined;
3. The Model ERP flowchart terminology did not match the terminology in the body of the document;
4. Enforcement language in the Model ERP needed more clarification to insure legal authority; and,
5. The Model ERP and the Model Business Inspection Plan did not cross reference each other.

CCCWP staff and the CCCWP MOC reviewed and updated the Model ERP and the Model Business Inspection Plan in response to the audit findings. Both documents were reviewed by the Management Committee and approved as models in April 2011. Each municipality is responsible for adopting the model or its equivalent.

Hosting Two (2) Inspector Training Workshops

CCCWP staff and the CCCWP MOC are responsible for ensuring all stormwater inspectors are trained to apply the most up-to-date and effective BMPs. During FY 2010-2011, the CCCWP hosted and the MOC developed two (2) inspector training workshops. The first training workshop held in July 2010 was a 1.5 hour introduction to BASMAA's Pollutants of Concern (POC) training materials, which focused on POC sources. The second workshop was a full day inspector training workshop held on February 24, 2011. Topics covered during the February workshop were an overview of the updated Model ERP and Model Business Inspection Plan; the Contra Costa Green Business Certification Program; sampling and assessing Notice of Intent (NOI) facilities; continuing POC source identification training for mercury, PCBs, and copper; stormwater compliance and enforcement case studies; and, sewer overflows. The workshops were well attended, and based upon the workshop evaluations it was well received.

Green Business Program

The CCCWP supports and participates in the Contra Costa Green Business Program. During FY 2010-2011, $9,000 was provided to support the Green Business Program. The CCCWP is the largest contributor of funds to the Green Business Program in the County. The Green Business Program is designed to publicly recognize private businesses and public agencies taking the extra step beyond baseline compliance with environmental regulations by instituting business practices designed to conserve resources (i.e., water and energy), reduce waste (reuse and recycling), and prevent pollution (good housekeeping practices and other pollution prevention BMPs).

This program encourages and facilitates business managers and inspectors to engage more openly, and fosters an environment of collaboration and cooperation in identifying and implementing cost-effective pollution prevention practices.

During FY 2010-2011, a total of 471 businesses were certified as a Green Business. The Green Business Program prepares an annual report every calendar year. The stormwater inspectors have assisted the Green Business program by encouraging potential Green Business candidates.

The effectiveness of this program results from an increasing list of businesses certified as green year after year. There is now a wait list in Contra Costa to be certified as a green business. County staff has a difficult time certifying and recertifying the number of businesses interested in being part of the program. More and more demand from the business community and the consumer community is driving a larger program in Contra Costa, perpetuating a growing need for green practices, green merchandise and good environmental stewardship. It is unknown as to the measurable effect the number of green businesses has on water quality in Contra Costa, but the more green businesses there are the more awareness there is in the community about green practices and how each individual, through their consumer choices, can help improve our environment.

Providing Outreach and Resources to Businesses

CCCWP staff, with input and direction from the CCCWP's MOC members, develop and update a number of outreach materials and resources for the business community including BMP brochures and posters, a website, and a hotline. These resources are used regularly by businesses, and promoted daily by all stormwater inspectors in Contra Costa. The CCCWP MOC members developed all the outreach materials used by stormwater inspectors. During FY 2010-2011, the MOC developed and produced a new version of the CCCWP's restaurant 'TIPS' brochure. This new brochure updates the previous TIPs brochures with new trash BMPs and condenses standard BMPs for housekeeping, grease management, floor and mat cleaning, spill prevention and cleanup, hazardous waste, and training for employees. During FY 2011-2012, all municipalities and stormwater inspectors will be distributing this new brochure to restaurants to inform the employees of the stormwater regulations. More outreach materials will be developed during FY 2011-2012, including translating pieces already developed to other languages.

The effectiveness of these materials in educating employees is improved through direct communication by inspectors with the business owners and their employees. Throughout the year, CCCWP staff receives calls from businesses wanting copies of the materials to train their staff and promote good environmental practices. Business owners use the website to find information on stormwater pollution prevention practices and how they can make their stormwater inspections as easy as possible. They also use the hotline to report illegal dumping in their area to help their business community prosper from a cleaner environment for their customers. A growing awareness of stormwater BMPs has stemmed from use of these resources. It is unknown how to link this increased watershed stewardship to improved water quality but many direct discharges of pollution have been eliminated from educating businesses in proper stormwater BMPs.

Conclusion

For over fifteen years the CCCWP has consistently maintained a strong inspection program. Many of the MRP requirements were already part of municipalities existing business inspection programs. With the exception of developing and implementing Enforcement Response Plans (ERPs), no significant changes have been made to the municipal inspection programs. To promote continuous improvement in the municipal inspection programs, CCCWP's MOC established the following goals for FY 2011-2012:

- Conduct an annual training workshop for all stormwater inspectors,
- Provide follow-up training on POC source identification and management,
- Update and/or expand the potential list of businesses to be inspected,
- Develop more outreach material for the businesses,
- Maintain the CCCWP's telephone hotline and website for businesses, and
- Continue support to the Green Business Program.

SECTION 5 – PROVISION C.5 ILLICIT DISCHARGE DETECTION AND ELIMINATION

Introduction

The CCCWP conducts some Illicit Discharge Detection and Elimination (IDDE) activities as a group. The CCCWP MOC is responsible for, among other things, overseeing IDDE group activities. The role and responsibilities of the CCCWP's MOC are detailed in Section C.2 of this report.

Accomplishments

The following IDDE group activities were conducted or initiated during FY 2010-2011:

1. Conducted monthly CCCWP MOC meetings and participated on BASMAA's MOC;
2. Updated the Model Enforcement Response Plan (ERP);
3. Managed the 1-800-NO-DUMPING Hotline and Hazmat Incident Reports; and,
4. Scoped and budgeted a project to expand BASMAA's Mobile Surface Cleaners Program in FY 2011-2012.
5. Continued Promotion of Charity Car Wash Kits

Provided below is a brief summary of each activity listed above:

Conducted Monthly CCCWP MOC Meetings and Participated on BASMAA's MOC

During FY 2010-2011, IDDE group activities were limited due to other competing priorities in the MRP. The CCCWP MOC did update the Model ERP and discussed training needs for IDDE program for FY 2011-2012. These efforts and others are discussed further below.

Updated the Model ERP

The CCCWP created a model ERP to satisfy the MRP Provisions C.4.c, C.5.b, and C.6.b, in FY 2009-2010. The model ERP is a guidance document for inspection staff to take consistent actions to achieve timely and effective abatement of illicit discharges. It provides guidance on when to employ the range of regulatory responses from warnings to legal actions including monetary fines and criminal prosecution. The need to update the Model ERP is discussed in detail in Section 4 of this report. CCCWP staff, with input and direction from the MOC, reviewed and updated the Model ERP in response to stormwater audits conducted by staff of the San Francisco Bay Water Board. The updated ERP was reviewed by the Management Committee and approved in April 2011 for use by all municipalities. Each municipality is responsible for adapting the model ERP consistent with their internal enforcement procedures.

1-800-NO-DUMPING Hotline and Hazmat Incident Reports

The CCCWP continues to operate the 1-800-NO-DUMPING hotline for citizens to report illicit dumping within their jurisdiction, and to obtain stormwater information. A total of 103 hotline calls were received in FY 2010-2011. The CCCWP has been logging calls since FY 2004-2005. These calls, combined with calls that come directly to municipalities and County Hazmat, are tracked annually. All hotline calls are referred to the appropriate municipality for follow-up and, if necessary, enforcement**.**

Of the 103 calls received, the overwhelming majority of the calls were attributed to an identifiable illegal dumping incident. The materials dumped included mattresses, appliances, trash, televisions, lumber, concrete, and other debris. The information from the hotline can help discern and address problem areas or trends found throughout the County.

The CCCWP continues to collaborate with the Contra Costa County Hazmat Division on Spill Response. Hazmat's countywide 24-hour response is a vital component of municipalities IDDE programs. Each month the CCCWP disseminates the Hazmat spill response or "Incident Reports" to each municipality's Management Committee representative. These reports inform each municipality of Hazmat occurrences within their jurisdiction as well as provide the CCCWP with illicit discharge incidents for tracking trends. Municipalities also use this information to track the type and locations of spills and dumping incidents, and to conduct appropriate follow-up.

Scope and Budget to Expand BASMAA's Mobile Surface Cleaner Program in FY 2011-2012

BASMAA's Mobile Surface Cleaner Program is a training and certification program for mobile surface cleaners. For more details on this program, please refer to Sections 2 and 4 of this report. The CCCWP MOC is working with BASMAA to expand the program to include two (2) new mobile business categories – automotive washing and carpet cleaning. This effort will be completed in FY 2011-2012. Details regarding this effort are provided in the BASMAA's "*MRP Regional Supplement: Training and Outreach Annual Reporting for Fiscal Year 2010-2011*", which was submitted separately by BASMAA on behalf of the CCCWP.

Charity Car Wash Kits

During FY 2007-2008, the CCCWP created a charity car wash pilot campaign to meet the need for controlling illegal discharges from charity car wash events. The charity car washing campaign included the creation of a brochure and several car washing kits each containing: one (1) submersible pump; one (1) 50' extension cord; one (1) 3' rubber mat; two (2) 50' garden hoses; one (1) metal spray nozzle; three (3) collapsible safety cones, and sumo tape. The brochure instructs charity car wash organizers how to conduct a car washing event without discharging wash water into the storm drain system. The brochure was mailed to children's organizations such as Boy Scouts of

America, schools and religious organizations. The brochure explains why allowing wash water from car washing is illegal and harms our stormwater system. The brochure instructs organizations to: 1) contact the CCCWP; 2) make sure that charity car washes are legal within their municipality; and, 3) use the car washing kit in accordance with the instructions provided. In FY 2010-2011, 13 organizations requested and successfully used the CCCWP's charity car wash kits. The CCCWP will continue to promote and track the use of these charity car wash kits next fiscal year.

Conclusion

The CCCWP's MOC will continue to review and assist in the development of needed guidance and training to help improve municipal IDDE programs. The CCCWP has budgeted and plans to conduct IDDE training for municipal staff in FY 2011-2012. The CCCWP's MOC is currently discussing important agenda topics and possible speakers for this workshop, and will continued to provide input and direction on BASMAA's project to expand the mobile surface cleaners program.

SECTION 6 – PROVISION C.6 CONSTRUCTION SITE CONTROLS

Introduction

The CCCWP Development Committee (DC) is comprised of municipal representatives, CCCWP staff and consultants. The DC is responsible for reviewing, researching and making recommendations to the CCCWP Management Committee (decision-making body) on matters related to construction and post-construction stormwater quality management. On behalf of CCCWP Permittees, the DC is tasked with development of guidance, tools, and training consistent with the mandates in our permits. David Swartz, Contra Costa County, and Frank Kennedy, City of Oakley, served as Chair and Vice-Chair of the DC, respectively. David Swartz and Frank Kennedy also represented the CCCWP on the BASMAA Development Committee.

As discussed in Section 3 of this report, the DC spent a majority of its time and resources on the development and/or review of various mandated Provision C.3 submittals to the San Francisco Bay and Central Valley Regional Water Quality Control Boards (Water Boards) including, but not limited to, “LID Treatment Credits for Special Projects”, “Model Biotreatment Soil Media Specifications”, “Green Roof Minimum Specifications”, and “Infiltration and Reuse Feasibility”. These activities are discussed in detail in Section 3 of this report. This section provides a summary of DC activities related to the Provision C.6 construction-site stormwater quality mandates.

Accomplishments

The CCCWP DC met in July, September, October, and November 2010; and, January February, March, May, and June 2011. The DC’s construction-site controls goals and objectives for fiscal year 2010-2011 were as follows:

1. Ensure timely reissuance of an East County NPDES Stormwater Permit that is consistent and coordinated with the MRP.
2. Share issues and lessons learned in: a) the design and construction of LID stormwater management facilities; b) the implementation of the new Construction General Permit; and, c) implementation of the Provision C.6 construction-site control mandates.
3. Review needs, and update or develop guidance and tools to assist municipalities with implementation of effective construction-site inspections and enforcement.
4. Continue active participation and coordination with BASMAA DC members in the review and development regional tasks to assisting MRP permittees with implementation of consistent and effective construction-site inspections and enforcement, including development of new or updated construction-site best management practice outreach materials.
5. Review, update and enhance the CCCWP's "Construction" web page.

Following is a brief description of activities and accomplishments that fulfilled these objectives:

East Contra Costa County Municipal NPDES Reissuance

In late 2009-2010 (April 2010), the Central Valley Regional Water Quality Control Board (Water Board) staff initiated discussions with CCCWP staff and consultants, and the East County Permittees (i.e., cities of Antioch, Brentwood, and Oakley; Contra Costa County; and, the Contra Costa County Flood Control and Water Conservation District) on reissuance of their Municipal NPDES Stormwater Permit. Throughout the summer of 2010, CCCWP staff and consultants, East County Permittees, and Central Valley Water Board staff successfully negotiated a permit consistent and coordinated with the Municipal Regional Permit (MRP) issued by the San Francisco Bay Water Board in October 2009. On September 23, 2010, the Central Valley Water Board approved on its uncontested calendar a reissued East Contra Costa County Municipal NPDES Permit. With the exception of implementation deadlines that are one-year behind those in the MRP, the Provision C.6 mandates are essentially identical to those in the MRP.

Tracking and Reporting Construction Site Inspections

Provisions C.6.e.ii. and C.6.e.iii. outline specific requirements for Permittees to track and report on mandated construction-site stormwater quality inspections, respectively. To facilitate consistency and avoid duplication of effort, the DC developed a model *Construction Site Inspection Report* adapted from a model developed by the San Mateo Countywide Stormwater Pollution Prevention Program. This work was initiated in late fiscal year 2009-2010 and was completed in early 2010-2011. The group developed an Acrobat form which could be filled out on a computer by municipal inspectors in the field or office. The form can be translated into a format readable by Excel to assist with end-of-year reporting. Some municipalities use this method or its equivalent, and others integrated the form into their own local database management systems.

Assist with Public Works Construction General Permit Compliance

The State Water Resources Control Board reissued its Construction General Permit (CGP) in September 2009. It became effective on July 1, 2010. In fiscal year 2009-2010, the CCCWP conducted outreach and training on the new CGP to both land development professionals and municipalities (see last year's report for further details). In fiscal year 2010-2011, the DC focused its efforts on assisting municipalities in CGP compliance for public projects. The CGP requires all persons responsible for implementing the requirements of the CGP to be appropriately trained and certified. The specific training and certification requirements are outlined in the CGP. To help facilitate meeting the minimum mandated training requirements, the CCCWP and the City of San Ramon co-sponsored a Qualified SWPPP Developer (QSD) / Qualified SWPPP Practitioner (QSP) training program for both municipalities and land development professionals. This training was provided February 28 through March 2, 2011, and was held at the San Ramon Community Center. Approximately 38 municipal staff representing 14 municipalities attended the training. Two individuals from the private sector also attended this training.

With adoption of the Construction General Permit and the MRP, the DC agreed BASMAA's construction-site stormwater quality outreach materials needed to be reviewed and updated (e.g., Blueprint for a Clean Bay, Pollution Prevention – Its Part of the Plan (Plan Sheet), and the Construction Industry Tri-fold Brochures). To initiate this process, Dan Cloak (CCCWP consultant) and Frank Kennedy (City of Oakley) reviewed BASMAA's existing outreach materials to scope out which materials should be updated and how to reflect MRP and Construction General Permit requirements. Their recommendation was the materials should be revamped rather than just updated. The BASMAA DC members agreed; however, due to competing priorities it was necessary to delay this regional task to next fiscal year.

Construction-Site Stormwater Quality Training Workshop

The CCCWP conducted a Construction-Site Stormwater Quality Training Workshop in fiscal year 2009-2010. Details regarding that training event were provided in last year's annual report. No formal CCCWP-level training was planned for fiscal year 2010-2011. The Municipal Regional Permit and the East Contra Costa County Municipal NPDES Permit require training every other year. The CCCWP has budgeted funds and plans to conduct a construction-site stormwater quality training workshop next fiscal year (2011-2012). Tentative agenda topics include, but are not limited to: design, construction, and inspection of LID treatment and flow control facilities; construction site inspection tracking and enforcement; CGP compliance on public projects; and, corrective measures to address trends, if any, in the number and percentage of construction-site stormwater quality violations within the six different BMP categories reported under Provision C.6.e.iii.1.(d) in municipalities' fiscal year 2010-2011 Annual Reports.

Construction-Site Controls Web Page

As part of its continuous improvement activities, the DC intended to review, update and enhance the "Construction" component of the CCCWP's C.3/New Development web

page; however, due to reduced staffing, competing priorities related the C.3 mandates, this activity has been delayed to next fiscal year.

Conclusion

The CCCWP DC substantially fulfilled its fiscal year 2010-2011 construction-site stormwater quality goals and objectives. With adoption of the East Contra Costa County Joint Municipal NPDES Permit, and substantial progress in compliance with several of the Provision C.3 mandated submittals, the DC hopes to be able to focus more effort and resources on assisting regional and program-wide activities to further improve our construction-site stormwater quality management programs in fiscal year 2011-2012.

The DC's goals and objectives for fiscal year 2011-2012 are tentatively as follows:

- Continue to assist Permittees with tracking and reporting construction inspections, and work with Water Board staff and BASMAA DC to clarify expectations. Make revisions to the model inspection form and/or other reporting tools if needed.
- Review, discuss and revised, as needed, model guidance for enforcement of construction requirements.
- Update CCCWP and Regional construction site outreach and education materials. for Construction BMPs
- Identify needed training topics and develop and conduct a CCCWP Construction Site Stormwater Quality Training Workshop.
- Continue active participation and coordination with BASMAA DC members and Water Board staff in the review and development regional tasks to assisting MRP permittees with implementation of consistent and effective construction-site stormwater quality management programs.
- Review, update and enhance the "Construction" component to the CCCWP's C.3/New Development web page.

SECTION 7 – PROVISION C.7 PUBLIC INFORMATION AND OUTREACH

Introduction

The CCCWP's Public Information/Participation Committee (PIPC), with assistance from CCCWP staff and consultants, is responsible for development of materials and products, information dissemination, technical workshops, marketing, and public outreach as required in the MRP. Most of the public information and outreach requirements in the MRP are contained in Provision C.7; however, additional outreach activities are required or encouraged in other MRP provisions. The PIPC works to identify and coordinate these public information and outreach mandates conducted as a group, or conducted regionally through BASMAA's Public Information/Participation Committee (PIPC). Attachment 1.1 and 1.3 provides a list of CCCWP representatives to BASMAA's PIPC, and participation and attendance at CCCWP PIPC meetings, respectively. In Fiscal Year 2010/2011, Julie Haas-Wajdowicz, City of Antioch, and Laura Wright, City of Pittsburg, served as Chair and Vice-Chair, respectively, of the PIPC.

The CCCWP's public information and outreach budget for FY 2010-2011 was $455,500. This was supplemented by the CalRecycle Oil Payment Program (OPP-1) Grant (formerly called the Used Oil Block Grant) totaling over $72,000 for a combined budget of approximately $527,500.

The CCCWP's Facebook page, launched in the fall of 2009 (please see http://www.facebook.com/cccleanwater_program), promotes our six (6) Litter ads, the Volunteer Creek Monitoring Program and provides a forum to post relevant articles to draw attention to stormwater issues. The CCCWP's Facebook page enjoys 131 "fans" and is cross linked with the CCCWP's website. Recently "Climate Action 2" and the "Sierra Club" began posting messages on the CCCWP's Facebook page. CCCWP staff appreciates their support and is pleased to associate with these NGOs.

In FY 2010-2011, the CCCWP improved its website homepage to contain rotating graphic images from our litter advertising campaign. The “hot spot” on the home page, where residents can pledge to stop using plastic bags in exchange for a recycled content reusable tote bag, received two hundred sixty-three (263) bag requests, up from 140 in FY 2009-2010. Most were as a result of a “branding” outreach letter campaign to new homeowners that was launched in the spring for FY 2009-2010 and continued through May 2011.

Approximately 15,000 educational materials and promotional items were distributed in Fiscal Year 2010-2011 to municipalities and the general public. This year’s promotional items included computer “flash drives”, “Chico” reusable content bags, pet waste bag dispensers, pens made of recycled materials and California poppy seed packets. The CCCWP strives to promote non-toxic, recyclable, native promotional items.

The CCCWP conducted a county-wide media “branding” campaign, and through BASMAA, provided regional media relations outreach. CCCWP staff attended and supported BASMAAs PIP meetings and outreach efforts.

Accomplishments

The CCCWP has long been an advocate of significant media campaigns to try to reach the general public. In the last three (3) years, the CCCWP increased its media budget to provide a stronger outreach and “brand” the CCCWP.

This section provides a summary of PIPC activities conducted in Fiscal Year 2010-2011.

C.7.b – Advertising Campaign

The CCCWP revised existing print, online, and outdoor media pieces for the “Litter Travels. But It Can Stop With You.” campaign that ran in fiscal year 2010-2011.

The CCCWP developed the following media pieces for fiscal year 2010-2011:

TV

- TV spots, which ran countywide on Comcast, Galavision and on National Geographic's "Preserve Our Planet" special.

Outdoor / Transit

- Billboard, which was placed alongside I-680 in Walnut Creek.
- Digital Billboard, which ran in East County along Highway 4 in the City of Pittsburg.
- Digital Billboard, which ran in West County along Highway I-80 in Richmond.
- Transit ads including Queens and Interior Cards, which ran on the West Cat, Tri Delta and County Connection bus lines.

Online

- Placecast online ads ran throughout Placecast's network of affiliate websites and were geo-targeted to County residents.
- Facebook online ads were geo-targeted to County residents ages 18 and older.
- ContraCostaTimes.com ads were geo-targeted to County residents.
- Claycord.com ads ran on the homepage of this popular local website frequented primarily by residents of the North/Central region of the County.

Direct Mail

- Approximately 16,000 introductory "branding" letters suggesting ways to reduce litter were sent to new homeowners countywide. Documentable responses (requests for reusable bag fulfillment) to this letter increased from 74 in Fiscal Year 2009-2010 to 263 in Fiscal Year 2010-2011, even though a similar number of letters were mailed both years.

Grassroots

- Outdoor mobile outreach was conducted by a cyclist riding a recumbent bicycle with attached signage. The cyclist rode at 12 community events and popular destinations in Walnut Creek, Danville, Pleasant Hill, Martinez, El Cerrito, Concord, Richmond, Lafayette, Antioch, Pittsburg and San Ramon.

Summer Promotion with Live Nation

- "Fancy…Litter?" TV spots aired during three Live Nation concerts at the Concord Sleep Train Pavilion in July and August, 2010.
- Placecast online ads ran throughout Placecast's network of affiliate websites, geo-targeted to County residents.
- Banners and Cube Signs were displayed at the Concord Sleep Train Pavilion during three concerts.

Youth Outreach

- In addition to traditional outreach, the CCCWP conducted a direct outreach campaign to all school districts in the County and several sports leagues in an effort to reach school age children with litter reduction messages.
- Also, CCCWP staff outreached to the Diablo Valley Youth Football League (DVYFL), which has eleven (11) teams throughout Contra Costa County, in an effort to further the anti-litter campaign at sports events and beyond.

School Districts

The CCCWP approached all 17 school districts in the County and requested permission to distribute an informational flyer with litter reduction tips for students and their families. Five school districts agreed to distribute the flyers to their students, with a combined reach of 42,863+ students and their families.

- Antioch Unified School District distributed the flyer electronically to all principals in the school district.
- John Swett Unified School District (Martinez) posted the flyer information on all school websites.

- Moraga Unified School District posted the flyer at the school offices.
- Pittsburg Unified School District distributed the flyer to all schools.
- Eleven schools in the San Ramon Valley Unified School District distributed the flyer in their weekly student/parent e-newsletter or posted the flyer on their website.

Sports Leagues

The CCCWP conducted outreach to a total of 41 Soccer, Football, Baseball, T-Ball, Rugby and General Recreation Leagues throughout the County, requesting that these leagues adopt a litter reduction policy. Three leagues agreed to adopt a policy, and posted information on their website, for a combined reach of 1,800+ players and their families.

- Pittsburg Pitbulls Soccer Club
- Liga Latina de Concord
- Delta Baseball League, this league also distributed campaign postcards to their league members

Website

- In order to keep visitors to the CCCWP website CCCleanwater.org interested and engaged, the home page was updated to show a slide show of compelling campaign photographs in place of the illustrated graphics used in Fiscal Year 2009-2010.
- The site was also updated to include a home page button with a message about keeping parks and sports complexes clean and free of litter, to correspond with our youth outreach efforts and our Op Ed pitch. This new button links to a page with helpful tips for reducing litter, as well as suggestions for sports game snacks that produce less trash.

Post-Campaign Public Opinion Survey

The purpose of this survey was to provide the PIP Committee with information about changes from fiscal year 2009-2010 to 2010-2011 in attitudes, perceptions and

behaviors of County residents that could aid with the continuing development and implementation of its outreach efforts and current campaign awareness. More specifically, the survey provided information including the following: the overall awareness of specific campaigns; perceptions and levels of concern about the impact/pollution levels of litter on local Contra Costa water bodies; levels of awareness and understanding of litter and protection of the County water bodies; understanding and knowledge of the CCCWP and its website; and levels of awareness and understanding of advertisements and specific slogans/messages related to litter. The post campaign survey results are available for review in Attachment C.7.b.iii.(2).

In an effort to reach a broader cross section of the County, this year's survey was conducted using a mail-in reply card with an incentive item. The survey instrument was developed to make the survey process simple and rewarding for respondents, and to increase the likelihood of completion. The survey featured a selection of the most pertinent questions from the previous phone surveys. Three thousand surveys were mailed equally to the four sub-regions of the County in May of 2011, and 444 completed responses were returned.

The results of the post-campaign survey, when compared to the results of the post-campaign survey conducted in Fiscal Year 2009-2010, show that across the board overall awareness of the Clean Water Program and the "Litter Travels" campaign increased, as did the percentage of respondents who felt high levels of concern about litter polluting local water bodies.

This year a separate online survey was also conducted to gauge opinions and obtain information about the demographics of the online audience in Contra Costa County. While not statistically significant, the survey results do provide helpful insights. Survey ads were placed on three websites where online ads ran during the campaign, and 419 surveys were completed.

- Most respondents, 75 percent, were between the ages of 18-49, 72 percent female, and 77 percent were from the North/Central part of the County.
- 97.7 percent of respondents felt that litter impacts/pollutes local water bodies.
- 19 percent TV, 17 percent Internet, and 15 percent Stenciled Storm Drains, were the most cited sources of information.
- Nearly 40 percent had heard of the Clean Water Program.
- 13 percent had visited CCCleanwater.org
- 28 percent had heard or seen info about the Clean Water Program.

Additionally, to maximize the opportunity when sending the fulfillment cards, the CCCWP mailed 444 letters to the mail-in survey respondents and 419 to the online survey respondents thanking and educating them about litter, how to support the CCCWP and included a call to action to visit the website.

The CCCWP website saw a significant amount of traffic during the campaign, but less overall than during Fiscal Year 2009-2010. This is not unexpected, as this is now the second year where the same or similar creative concepts were utilized, and many residents would likely have seen the advertisements multiple times and already visited the website.

In the last calendar year, the site received a total of 6,823 unique visitors, which was a decrease in traffic of 55.93 percent. The percentage of new visitors to the site did increase 2.75 percent from FY 2009-2010, to 83.94 percent.

Principal Findings - Impact of Litter on Waterways

- When asked whether they thought litter impacts/pollutes local water bodies, 94.5 percent said yes, compared to 76.5 percent in 2010 and 87 percent in 2009.
- 66 percent of residents say they would rate their concern about litter polluting water *very* high, 31 percent say *somewhat* high, and 4 percent say a *little*. None of the respondents indicated *not at all* concerned.

- In 2011, residents of West County and unincorporated areas, African Americans, Hispanics and Asians were more likely to say yes, compared to 2010, when renters, females and African Americans were the most concerned about litter polluting water. Age and gender were not asked in this survey, so that data was not available to compare.
- The percentage of Asians, 80 percent, saying they were *very concerned* about litter polluting local water bodies was higher than African Americans, 67 percent, Caucasians, 67 percent, or Hispanics, 54 percent. This was different than the 2010 and 2009 findings when 37 percent of Caucasians and 38 percent of Asians were less likely to say *very* concerned than African Americans.
- Of the residents of the West part of County, 77 percent, indicated *very concerned* more than residents in other areas; East, 65 percent, Lamorinda/South 61 percent, North/Central, 63 percent and Unincorporated Area, 67 percent.
- 18- 29-year-olds were least likely to indicate *very concerned*, 50 percent, and those 65 years and older were most likely, 76 percent.

Principal Findings - Awareness of Advertising

- When asked if they had heard or seen any information about how litter travels and builds up, 45 percent of the respondents indicated *yes* they had heard or seen information, 39 percent said *no,* 11 percent *maybe* and five percent *didn't know.* There was a significant increase in the percentage of people who said they had seen information compared to both 2010, 31 percent, and 2009, 33 percent, while there was a decrease in the percentage of those who have not (66 percent in 2010 and 65 percent in 2009).
- Consistent with past years, older respondents aged 60+ were much more likely to say *yes* they had seen information in the past year. 40- 49-year-olds were more likely to say *maybe*, and both 18- 29-year-olds and 50- 59-year-olds were more likely than other age group to say *don't know*.
- Respondents were permitted to give multiple answers to the question 'Where did you hear or see this information?' and a total of 757 answers were given. The highest percentage had seen information about how litter travels on the *TV,* 42

percent, which was almost identical to 2010 at 41 percent. The next highest percentage was *newspapers* and *stenciled storm drains* at 25 percent each, followed by the *internet*, 15 percent, *magazines,* 13 percent, *radio*, 11 percent, *friends/relatives/neighbors*, nine percent, *billboards*, eight percent, *government agencies*, six percent, *school programs* and *bus signs*, five percent each.

- The percentages for all media types, except newspaper, (currently 25 percent and 31 percent in 2010), were higher than in 2010. The internet, (currently 25 percent and two percent in 2010), stenciled storm drains, (currently 25 percent, and 10 percent in 2010) and magazines, (currently 13 percent and two percent in 2010) had the most substantial increases.
- Hispanic respondents were less likely than others to say television, 31percent, and newspapers, 12 percent, while Asians were more likely to say newspapers, 40 percent, internet, 27 percent, and government agencies, 17 percent.
- Asians, 30 percent, and Caucasians, 31 percent, indicated stenciled storm drains more than other ethnicities, whereas no African Americans and only 12 percent of Hispanics report stenciled storm drains.

Principal Findings - Awareness of Contra Costa Clean Water Program and Website

- 38 percent of respondents have heard of the CCCWP compared to 31 percent in both 2010 and 2009; an increase of seven percent. The majority of respondents, 54 percent, had not heard of the CCCWP before, which is less than the 62 percent who had not heard of the CCCWP in both 2009 and 2010.
- Residents of the North/Central and unincorporated areas were most likely to have heard of the CCCWP, as were people over the age of 65, compared to 2010 when residents in the North/Central, 17 percent, and unincorporated areas, 17 percent, were more likely to have said they were aware of the advertising than those from the West, eight percent. This was also a change from 2009, when the West had the highest, 18 percent of residents, who had ever seen or heard the ad, and Non-Incorporated had the lowest, five percent.
- Only five percent of respondents indicated they had ever visited the website. Residents in the East are more likely to say yes, 8 percent, than the other four

areas; Lamorinda/South, two percent, West, three percent, North/Central, six percent, and unincorporated areas, four percent.

Principal Findings - Awareness of Specific Ads, Slogans & Messages

- The percentage of respondents who indicated they had heard the slogan "Litter Travels" increased from 14 percent in 2010 to 18 percent in 2011. Respondents who say *no* decreased from 78 percent in 2010 and 83 percent in 2009 down to 72 percent in 2011.
- The percentage of respondents who heard or saw the advertisement varied between regions of the county, with East highest, 27 percent, followed by North/Central, 20 percent, unincorporated areas, 17 percent, Lamorinda/South, 15 percent, and West, 13 percent. This is a change from 2010 when the North/Central Area had the highest percentages of respondents who had heard or seen the advertisement.
- This year neither age nor ethnicity appeared to make a significant difference in whether or not respondents have heard or seen the advertisement, but Caucasians and African Americans were slightly more likely to say they have. Currently, Hispanics are much more likely to say *don't know* than the other ethnicities.

C.7.c – Media Relations

Media Relations was partially fulfilled through the development and pitching of an Op Ed piece authored by a Contra Costa County parent. This Op Ed focused on the increased visibility of litter and the need for collaborative efforts between sports leagues, families and team members to reduce the amount of litter at youth sporting events. This piece ran in the Contra Costa Times Editorial section on July 1, 2011.

Complete fulfillment was achieved through BASMAA regional efforts. See BASMAA's "*FY 2010-2011 Regional Supplemental Training Outreach Report*", which was submitted separately by BASMAA on behalf of Contra Costa Permittees.

C.7.d – Stormwater Point of Contact

The CCCWP's website provides a phone number and email contact information for each municipality's designated stormwater representative at http://www.cccleanwater.org/city-contact-list.html. The CCCWP's Administrative Analyst updates the Contacts page when notified of a change of representative. The CCCWP website is also accessible from the "Links" page on the BASMAA website.

C.7.e – Public Outreach Events

Live Nation Concerts at Concord Pavilion – A "branded" booth was staffed at three concerts in July and August, 2010. Municipal staff surveyed concert attendees and solicited volunteers to participate in creek cleanups. Approximately 300 "Litter Travels" shammies containing a take your car to a car wash message were distributed.

Bringing Back the Natives Garden Tour – The CCCWP sponsored the Seventh Annual Bringing Back the Natives Garden Tour, which took place on Sunday, May 1, 2011, showcasing forty-nine (49) gardens located in seventeen (17) cities and unincorporated areas in Alameda and Contra Costa counties (Alamo, Albany, Berkeley, Clayton, El Cerrito, Fremont, Hayward, Kensington, Lafayette, Livermore, Martinez, Moraga, Oakland, Orinda, Pittsburg, Pleasanton, Richmond, San Ramon, and Walnut Creek).

The tour received overwhelming interest from the public. This year 7,041 people registered for the tour, a 9% increase in registrants over last year's tour. More than 60 garden talks and demonstrations were given throughout the day on a plethora of subjects. Talk topics included how to: remove a lawn; select, plant, and care for natives in general, and select natives for specific areas; design a simple, low-maintenance native plant garden; attract bees; improve soil so as to have a healthier garden; choose appropriate natives; design and install a native plant garden; create a low-maintenance

native plant garden; control weeds without using herbicides; water efficiently; maintain a native plant garden; design a native hillside garden; design and install a native garden yourself; garden for wildlife in general, and native bees and butterflies in particular; and how to control erosion, among other topics.

Survey results showed registrants' familiarity with gardening with native plants was:

- 38% - beginner
- 53% - some knowledge
- 9% - old hand

The 2011 tour attendees were highly motivated to learn new gardening techniques. When asked what they would like to learn from the tour the majority of respondents (75%) wanted to learn how to select native plants. 55% wanted to learn how to conserve water. 52% wanted to learn how to garden for wildlife. 34% percent wanted to learn how to reduce pesticide use. 33% wanted to learn how to remove their lawns, and 23% wanted to learn about composting. 81% of registrants who had attended a previous Bringing Back the Natives Garden Tour, and who filled out the evaluation form, said they had changed their gardening practices because of their participation in the Bringing Back the Natives Garden Tour. 74% of registrants who had attended a previous Bringing Back the Natives Garden Tour, and who filled out the evaluation form, said they had changed their gardening practices because of their participation in the Bringing Back the Natives Garden Tour.

Evaluations of repeat registrants from the 2011 tour showed changes made after attending a prior Bringing Back the Natives Garden Tour: 18% of respondents had incorporated natives into their gardens (thereby reducing herbicide use and conserving water; 13% were encouraging wildlife with plant choices; 12% had grouped plants by water needs and incorporated drought resistant plants into their gardens; 12% had increased the density of plantings to out-compete weeds (reducing herbicide use and conserving water); 11% were tolerating some insect damage; 10% had begun mulching; 8% had amended their soil; 6% had reduced the size of their lawn; 5% had reduced or

eliminated pesticide use; 5% had installed efficient irrigation; 5% were grasscycling; 4% were composting; and 4% had reduced the amount of hardscape in their gardens.

Repeat visitors were highly motivated to make changes in their gardens. When asked what they planned to do: 34% planned to increase the density of plantings to out-compete weeds; 26% to group plants of similar water needs; 24% to install efficient irrigation; 19% to encourage wildlife; 18% to reduce the size of their lawn; 16% to incorporate native plants into their gardens; 15% to mulch; 15% to minimize hardscapes; 13% to compost; 12% to amend their soil with compost; 8% to tolerate some insect damage to plants; 5% to grasscycle; and 5% to reduce or eliminate pesticide use.

The tour was highly motivating to first time registrants who completed the evaluation. 46% planned to incorporate native plants into their gardens; 40% of first-time registrants responded that they planned to increase the density of plants, thus helping to out-compete weeds and reduce water use; 40% of first time registrants planned to group plants by water needs; 36%planned to encourage wildlife; 33% planned to incorporate drought-resistant plants into their gardens; 29% planned to reduce the size of their lawns; 29% to install efficient irrigation; 23% planned to mulch; and 31% to amend their soils; 19% to compost kitchen scraps and yard waste; 22% planned to tolerate some insect damage; 14% planned to reduce or eliminate pesticide use; and 11% planned to reduce the amount of hardscape in their gardens.

Our Water Our World – As committed in the FY 2009-2010 Annual Report, the CCCWP reinstated the Our Water Our World (OWOW) program. OWOW's goal is to help raise awareness of the connection between pesticide use and water quality and provide information to consumers at the point-of-purchase about integrated pest management (IPM) and less-toxic alternatives that do not cause water quality problems.

Four (4) customer outreach tabling events, 4 hours in length were conducted at OWOW stores throughout south and Central County - May 28, 2011 at Osh San Ramon, June 5,

2011 at OSH in Walnut Creek, June 12, 2011 at OSH in Concord and June 18, 2011 at ACE in Alamo. A total of 190 customers were educated about a less toxic Integrated Pest Management approach to managing pests. For more detailed information, see Section 9 of this report.

C.7.f – Watershed Stewardship Collaborative Events

Bay-friendly Landscape (BFL) and Gardening Coalition – The CCCWP continued to be a major supporter of BFL, a one-of-a-kind organization that provides local non-structural Integrated Pest Management (IPM) landscape training. The CCCWP funded and held a BFL workshop in November 2010, in addition to paying annual dues. For more details regarding BFL, see Section 9 of this report.

California Products Stewardship Council (CPSC) – The CCCWP continued to support CPSC through its annual membership fees. The advocacy of the CPSC to try to make producers responsible for their own waste is an important step toward reducing trash and mass consumption. Product stewardship creates incentives for producers to "design it green and take it back," thereby reducing the environmental impact of product waste. By diverting products from the waste stream, we conserve resources and ultimately reduce the demand for landfills. CPSC's goal is to align public and private sectors through information, advocacy and legislation to ensure ongoing product responsibility. For more details, see Section 10 of this report.

Green Business Program - The CCCWP has annually provided staff support and financial contributions to the Green Business Program to assist with their outreach activities to the business community. The CCCWP, one of 25 local agencies, continues to be the highest contributor to this effort. Strategic meetings are held quarterly. For more details on the Green Business Program see Section 4 of this report.

Contra Costa Watershed Forum – Staff routinely attends and participates in Contra Costa Watershed Forum (CCWF) meetings, an open committee of some fifty

organizations, including state and local agencies, local non-profit environmental and education organizations, community volunteer groups, and private citizens. The Forum is premised on the notion that actions in a watershed are inter-related and, therefore, that broad participation and cooperation is needed to affect change. Members of the CCWF work together to find common approaches to making our water resources healthy, functional, attractive and safe community assets.

The Forum impacts the community, environment and decision makers in Contra Costa County (CCC). Concerned with urban, suburban, and rural areas in the San Francisco Bay Delta area, the Contra Costa Watershed Forum facilitates local agency and citizen collaboration, fosters innovative strategies for stewardship and protection of watershed resources, and encourages regional capacity building in CCC and neighboring areas.

C.7.g – Citizen Involvement Events

Citizen Volunteer Monitoring Program – The CCCWP provided substantial funding for and support to the Citizen Volunteer Monitoring Program. The overall goal of the Citizen Volunteer Monitoring Program is to aid in protecting and restoring the San Francisco estuary and its tributaries by reducing/eliminating pollutants and impacts to Contra Costa County (CCC) water bodies. For further details regarding the citizen volunteer monitoring program, see Section 8 of this report.

C.7.h – School Age Children

Kids for the Bay - The CCCWP continued its collaborative work with the “Kids for the Bay” program to deliver its “Watershed Action Program (WAP).” Seventeen (17) third, fourth and fifth grade classrooms, educating 496 students and seventeen (17) teachers, participated in “hand- on” science experiments and activities in their classrooms that engaged them in their local watershed, while inspiring them to take action. The “Kids for the Bay” program partnered with schools in each of the following cities/towns – El Cerrito, Hercules and Walnut Creek for the 2010/11 Fiscal Year. Each of the WAP teachers and students participated in five interactive classroom workshops, an action

project and sixteen (16) classes took a field trip to a local creek or bay habitat and one (1) class conducted an on campus exercise to practice and implement much of what they learned in the classroom. Seven (7) of the seventeen (17) teachers who participated in FY 2010-2011 were returning teachers from FY 2009-2010.

Action projects are an integral component of the WAP, and provide students the important opportunity to 1) use the knowledge they have gained during the program and 2) take action and educate others on how to help their local watershed. Action Projects included:

- Five (5) classes that chose Natural Pesticides, making pesticides from natural ingredients available around the house. These students learned how pesticides are a poison that can get into the groundwater and soil.
- A Richmond class chose to complete the Safe Bay Fishing and Cooking Presentation.
- Two (2) classes, one in Richmond and one in Pittsburg, gave presentations to peer classrooms on what they had learned.
- Students in Martinez created posters about the dangers of stormwater pollution and posted them around the school campus to educate other students.
- El Cerrito students conducted a creek restoration/clean-up project along Cerrito Creek.
- Students in Pleasant Hill performed theater for the other five (5) classes, featuring environmental villains and heroes.
- Antioch and Hercules classes wrote persuasive letters to family members to urge them to change their pollutant behavior and conserve fresh water at home.

After students learned about their local watershed, they followed up their Action Project with a visit a creek, bay or delta habitat that is close to the school community. This helped students understand that the waterways in their local watershed are close by and linked to their own school and homes. Using scientific equipment, students investigated and identified aquatic invertebrates and studied native plants, birds and

other wildlife. Field Trip highlights included water quality monitoring, investigating shoreline organisms, and a shoreline trash clean-up.

While the long-term effects of the program are unknown one of the participating teachers summed it up her experience when she wrote “There has been a definite impact on students’ families as a result of the KIDS for the BAY lessons. Many students report that parents were unaware of some of the facts regarding pollution, conservation, and recycling that they have shared with them. Some changes with routines and behaviors have come about from this new awareness.”

Newspapers in Education - Newspapers in Education (NIE) has been a continuing program the CCCWP supports in collaboration with many other public agencies. It provided student activity booklets and the use of newspapers to identify various environmental activities students and their families could implement. In FY 2010-2011 eighteen (18) high school, twelve (12) middle school and nineteen (19) elementary school classrooms were served, a reach of approximately 1600 students across three (3) of the four (4) regions in Contra Costa County. The Stormwater Management Program curriculum stresses the storm drain system and causes of stormwater pollution and how it can be prevented, followed by two activities designed to reinforce the information.

Direct Outreach to Schools and Athletic Organizations – See C.7.b above.

Oil Payment Program (OPP-1) Grant/Mr. Funnelhead - Several municipalities within the CCCWP provided their allocation of grant funds to the CCCWP so a countywide comprehensive effort could be instituted. Approximately $72,000 was budgeted for this activity in FY 2011-2012. Matt Bolender is our OPP-1 Grant consultant, using the “Mr. Funnelhead” character to provide educational outreach.

The OPP strives to reach across all age groups, but places particular emphasis on the youth because they are our most forceful environmental stewards. CCCWP staff

believes nothing will motivate an adult to change behavior more than being corrected by a child.

There are several components of the OPP including: certifying and recertifying used-oil recycling centers throughout Contra Costa County; providing an educational program targeted to third and fourth-graders in schools throughout Contra Costa County; providing outreach at public events throughout Contra Costa County distributing materials; providing programming to educate and entertain people; and, a cable advertising component. Also, a "Mr. Funnelhead" website exists as an additional outreach activity.

A total of eight (8) oil collection centers were certified, two (2) were lost, for a net gain of six (6), now a total of sixty (60) oil collection sites.

Mr. Funnelhead made appearances at twelve (12) community events in the cities of Antioch, Clayton, Concord, Danville, Orinda, Pleasant Hill, San Ramon, and Walnut Creek providing a broad outreach to all demographics.

Mr. Funnelhead's educational and entertaining assemblies were held at twenty-two (22) elementary schools in the cities of Antioch, Concord, El Cerrito, Hercules, Oakley, Moraga, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, Walnut Creek and areas of unincorporated County, educating 6,000 students about recycling used motor oil and its harmful effects on stormwater. These appearances have a long lasting effect on the children who recount their experience years and decades later to Mr. Bolender at community events.

Conclusion

CCCWP staff is always receptive to new methods of outreach and looks forward to continuing to establish itself as the local environmental steward the public can trust, respect and depend on to enhance our water quality and environment.

SECTION 8 – PROVISION C.8 WATER QUALITY MONITORING

Introduction

This section provides an overview of the CCCWPs monitoring work for FY 2010-2011. A summary of the historical context of water quality monitoring in Contra Costa County was presented in the CCCWP's Annual Report in FY 2009-2010.

All water quality monitoring activities required under Provision C.8 of the MRP are conducted on a regional level through the Bay Area Stormwater Management Agencies Association (BASMAA) and the Regional Monitoring Coalition (RMC) with the exception of C.8.b, San Francisco Estuary Receiving Water Monitoring and C.8.f, Citizen Monitoring and Participation. Compliance with C.8.b is attained via the CCCWP's annual funding contribution to the Regional Monitoring Program (RMP) which in FY 2010-2011 totaled over $136,000. In addition, CCCWP staff and consultants participated in the RMP's Sources, Pathways and Loadings Workgroup (SPLWG). Compliance with C.8.f, Citizen Monitoring and Participation, was attained via the CCCWP financial sponsorship of the Volunteer Creek Monitoring Program (housed by the Contra Costa Department of Conservation and Development) in the amount of $65,000. Further discussion of this partnership is documented below.

Accomplishments

The CCCWP's Role in the Regional Monitoring Coalition (RMC)

The RMC is a consortium of MRP-regulated municipalities who have committed to collaboration and cooperation in the implementation of the Monitoring and Pollutant of Concern (POC)-related provisions. This collaboration ensures consistency in monitoring means and methods as well as economies of scale in implementation. As reported in the FY 2009-2010 Annual Report, all 21 Contra Costa municipalities affirmed their participation in the RMC. In FY 2010-2011, CCCWP staff actively

participated in BASMAA's Monitoring and POCs Committee (MPC) which meets every first Wednesday of the month and is the lead committee responsible for implementation of the Monitoring and POC-related provisions. In addition, two (2) municipal representatives, Alfredo Hurtado of Pittsburg and Lynne Scarpa of Richmond, also served as CCCWP representatives to the MPC and actively participated and helped shape its direction.

Under the RMC, much progress was made on the design of Creek Status Monitoring/Rotating Watersheds (C.8.c) during FY 2010-2011. As the workload surrounding creek status design grew, a sub-group of the MPC formed mid-year to allow sufficient time and attention to move the design along. This sub-group is called the RMC Monitoring Design Workgroup and it met every month starting in November 2010. CCCWP staff and a representative from the City of Richmond, Lynne Scarpa, actively participated in the Workgroup and brought many cogent arguments to the attention of the group. In addition, the CCCWP provided in-kind contributions towards the RMC in the form of funding for its consultants to do direct-MRP compliance work. For creek status design, the CCCWP sponsored Armand Ruby Consulting to participate in the design process with the team led by EOA, Inc. These in-kind contributions on the part of individual stormwater programs are being tracked in a regional spreadsheet designed to equilibrate the level of effort among stormwater programs to levels which are equivalent to their proportional share of population.

Under the RMC, much progress was also made on the Pollutants of Concern/Long Term Monitoring, C.8.e, in FY 2010-2011. As described in the MRP, Permittees are allowed to pursue an alternative approach to POC/Long Term Monitoring by designing a monitoring program with an equivalent level of effort to that prescribed in C.8.e. Stormwater programs elected to take this approach and met under the auspices of the Small Tributaries Loading Strategy Workgroup (STLS) to continue development of this alternative approach. Two (2) staff from the Alameda and Santa Clara stormwater programs served as the official BASMAA designees to the STLS and CCCWP staff and consultants also participated periodically in the STLS development.

By the end of FY 2010-2011, the STLS team had agreed upon its recommended list of creek sample locations and nearly finalized the list of analytes, sample frequencies and analytical methods. In Contra Costa, the POC/Long Term station will be located on lower Marsh Creek in the vicinity of the existing USGS gauging station. Monitoring will commence in October 2011. The task of monitoring on Marsh Creek is more complicated than the other Bay Area creeks because the CCCWP is also bound by the requirements of the Central Valley Water Board in their East Contra Costa Municipal Stormwater Permit.

The CCCWP spent a significant amount of time in FY 2010-2011 to select a monitoring contractor to perform the POC/Long Term Monitoring and at the conclusion of a competitive process, selected a team led by ADH Environmental to perform all the Program's POC/Long Term Monitoring (as well as Status Monitoring and Monitoring Projects) for a 3-year period.

All of the Monitoring and POC-related activities of the MRP coordinated through the RMC, for which there are deadlines in FY 2010-2011, are summarized in the "BASMAA Regional Annual Report Supplement for POCs and Monitoring, FY 2010/11".

Contra Costa Monitoring and Assessment Program (CCMAP)

In addition to the monitoring required under the MRP, the CCCWP has elected to continue its own monitoring program, the Contra Costa Monitoring and Assessment Program (CCMAP), in the years between MRP adoption and commencement of MRP-required monitoring in October 2011. This effort, while voluntary on the part of the CCCWP, is indicative of a strong commitment on the part of Contra Costa Permittees to assess and document the health of creeks in their county. CCMAP is a long-term strategy designed to assess the condition of watersheds, water bodies, and water quality within Contra Costa County using benthic macroinvertebrate (BMI) community

assemblages as the primary indicator of water quality and watershed health. The overall goal of CCMAP is to identify problem areas and reduce stormwater pollutants within the County's watersheds.

CCMAP is under the direction of the CCCWP's Monitoring Committee and in FY 2010-2011 was comprised of representatives from five (5) Contra Costa Permittees who met eight (8) times over the course of the year (see Attachment 1.3, Program Subcommittee Attendance, for the list of participating representatives). The committee provides the overall guidance for the monitoring program and recommends actions to be taken on behalf of all Contra Costa Permittees.

CCMAP has been implemented in three phases:

Phase 1: Preliminary Development
Phase 2: Implementation of CCMAP into Pilot Watershed
Phase 3: Volunteer Training, Recommendations and Continued Monitoring

Phases 1 and 2 of CCMAP were initiated within our pilot watershed, Alhambra Creek in Fiscal Year 2000-2001. The CCCWP began implementing Phase 3 in FY 2001-2002 using lessons learned from the pilot effort. The CCCWP hired a Volunteer Monitoring Coordinator in FY 2003-2004 to assist in expanding into new watersheds, and continued to work with the coordinator in leading citizen-based GPS surveys and biological and physical habitat assessments in Contra Costa Watersheds in FY 2010-2011. See the next section "Accomplishments" for a discussion of these results.

Contra Costa Volunteer Monitoring Program

In collaboration with the Contra Costa Department of Conservation and Development (DCD, formerly the Contra Costa County Community Development Department), the CCCWP submitted a Proposition 13 grant application to the State Water Resources Control Board (SWRCB) in FY 2001-2002. In FY 2002-2003, the CCCWP and DCD

were notified that they had been awarded a grant of $250,000 for the development and implementation of the Contra Costa Citizen Watershed Monitoring/Assessment Program (Volunteer Monitoring Program). The overall goal of the Volunteer Monitoring Program is to aid in protecting and restoring the San Francisco estuary and its tributaries by reducing/eliminating pollutants and impacts to Contra Costa County (CCC) water bodies. Grant funding expired in 2007 and as of that time bioassessments had been conducted in 19 of the 29 major Contra Costa County watersheds.

When the grant ended, the Volunteer Program was in danger of expiring completely. Through the collaboration of the CCCWP and DCD, a plan was developed to sponsor the Volunteer Program with funding from the CCCWP. The CCCWP has since provided financial support in the amount of $65,000 per year to the Volunteer Monitoring Program starting in FY 2006-2007 and continuing through FY 2010-2011. In exchange, the volunteers, under the leadership of CCCWP staff and the Volunteer Monitoring Coordinator, have conducted BMI sampling in creeks throughout the County.

Implementation of CCMAP monitoring continued in spring 2010. Due to the fact that BMI samples are collected in late spring and take approximately 3-5 months to analyze (i.e., into the next fiscal year) it has been standard practice for the CCCWP to report on the previous fiscal year's sample results. So this FY 2010-2011 Annual Report provides data and reporting on samples collected in spring 2010 (FY 2009-2010).

The following paragraphs summarize the findings and conclusions of spring 2010 monitoring conducted via CCMAP. A copy of the full report entitled "CCMAP, Summary of Benthic Macroinvertebrate Bioassessment Results (2010), September 9, 2011" can be found as Attachment 8.1 of this Annual Report.

In 2010, the volunteers conducted bioassessment monitoring under the guidance and direction of a professional field biologist, Scott Cressey, with monitoring performed at 12 creek sampling stations, within 7 watersheds in Contra Costa County. To provide a measurement of Aquatic Life Use condition at these stations, a preliminary Benthic

Index of Biotic Integrity (B-IBI) score was calculated for each station. The B-IBI score is based on a set of metrics computed from the raw BMI taxonomic data, according to the approach developed previously for creeks in Contra Costa County. The B-IBI scores were then attributed to aquatic life use condition categories (poor, marginal, fair, good, or very good), based on a standardized grading system that assigns specific ranges of B-IBI scores to the categories.

Results from the 2010 bioassessment monitoring indicate that B-IBI scores from the majority (58%) of creek stations sampled in Contra Costa County fell in the fair category, with the remainder of the 2010 stations scoring in either the good (17%) or marginal (25%) categories. Because of the relatively low number of sites monitored, the 2010 results cannot be reliably extrapolated as being more broadly representative of Contra Costa County watersheds.

BMI community composition and the resulting B-IBI scores vary both spatially throughout Contra Costa County (due to differences in geographical factors, including land use, underlying geology, and topography) and temporally (due particularly to annual and seasonal differences in climate and weather, especially hydrological factors). Analysis was performed to assess both temporal and spatial variation in B-IBI scores over the ten-year period of bioassessment monitoring.

Annual variability in average IBI scores is attributable to a number of factors, including antecedent (preceding) rainfall and other climatological conditions, as well as monitoring site selection for that year. Prior analysis of the 2006-2009 BMI metrics indicated that annual rainfall amount and antecedent spring rainfall amount may affect average BMI community composition in a given year. Additional, detailed analysis conducted with the ten-year (2001-2010) data set indicated that certain climatological factors (prior 30-day rainfall total, cumulative seasonal rainfall to date, and prior 30-day average high temperature) did not correlate well with site-and-date-specific B-IBI scores. The effects of these climatological factors on BMI community composition seem to be overwhelmed by the spatial differences among sites at any given time.

Selected geographical factors that may influence benthic community composition at bioassessment monitoring sites throughout Contra Costa County were evaluated using average site B-IBI scores from the ten-year (2001-2010) data set. This analysis confirmed that elevation correlates significantly with mean site B-IBI score, with higher average B-IBI scores generally occurring at higher elevations. This may reflect prevailing land use, as the degree of urbanization tends to decrease with increasing elevation in Contra Costa County. The various effects of urbanization (changes in hydrology, riparian vegetation, creek substrate, and water quality) may be reflected therefore in the correlation of B-IBI scores with elevation.

New Zealand mudsnails (*Potamopyrgus antipodarum*) were not present in any of the 12 samples collected in 2010.

Conclusion

FY 2010-2011 marked the first full year of MRP implementation for the CCCWP and the RMC. There were many challenges and due to the collaboration among stormwater programs, there was also much progress. In the coming fiscal year (FY 2011-2012), the CCCWP expects to finalize the details of monitoring approaches through regional collaborations with BASMAA partners and commence POC/Long Term Monitoring at Marsh Creek in October 2011, and commence Status Monitoring in spring 2012.

SECTION 9 – PROVISION C.9 PESTICIDES TOXICITY CONTROLS

Introduction

The CCCWP conducts pesticide toxicity control group activities on behalf of all 21 Permittees within Contra Costa. Group pesticide toxicity controls activities conducted in FY 2010-2011 included: assisting municipalities with implementation and improvement of their pesticide reduction programs; tracking and participating in pesticide regulatory initiatives; conducting training and outreach to municipal employees and contractors on Integrated Pesticide Management (IPM); providing outreach to residents and the general public on proper pesticide use and disposal; working with the Contra Costa County Agricultural Commissioner; participating in BASMAA's MOC; and, facilitating the CCCWP's MOC to coordinate countywide compliance with the Provision C.9 mandates. The CCCWP MOC and BASMAA's MOC are the general venues where most pesticide activities, BMPs, trainings, and future projects are planned and directed. The CCCWP MOC's purpose and structure is detailed in Section 2 of this report.

Accomplishments

A summary of pesticide toxicity control related activities conducted as a group in FY 2010-2011 are provided below:

Facilitating monthly CCCWP MOC meetings and participating on BASMAA's MOC

The CCCWP's MOC provides a forum for municipalities to share information, common issues and lessons learned related to reducing pesticide toxicity in our urban creeks. A summary review of specific topics and activities coordinated through the CCCWP's MOC are discussed below.

C.9.h.ii – Public Outreach: Point of Purchase

Our Water Our World - The CCCWP funds and participates in the "Our Water Our World" (OWOW) program, which provides educational outreach directly to the consumer/user at the point of purchase. Details are provided in the BASMAA "*MRP Regional Supplement for Training and Outreach*."

Locally, the CCCWP distributes the OWOW literature to schools and at community events in addition to the general public when requested. CCCWP staff promotes OWOW through our website and verbal communication to citizens, schools, and businesses. Sixteen (16) stores were recruited to join the "Our Water Our World" Program in Contra Costa County in FY 2010-2011. All sixteen (16) were set up with literature racks, fact sheets, and shelf talkers. Nine (9) stores were given a formal training during which 77 employees were trained between January and June 2011. An average of nine (9) employees received the training per store. Several pests were the focus in FY 2010-2011 (i.e., Spotted Winged Drosophila, spider mites, citrus leaf miner and white fly). Store employees were also encouraged to take the additional online training for retail stores through the University of California Integrated Pest Management (UCIPM) and to sign up for the UCIPM quarterly online newsletter.

C.9.h.vi – Public Outreach: Pest Control Operators

Bay-friendly Landscape (BFL) and Gardening Coalition – The CCCWP continues to be a major supporter of BFL, a one-of-a-kind organization that provides Integrated Pest Management (IPM) training and certification to public employees and private sector landscape professionals. As a member of the BFL Coalition, the CCCWP pays dues to support BFL activities and the MOC helps coordinates BFL training events in Contra Costa County. The CCCWP, with financial and in-kind support from the City of Walnut Creek, funded a BFL training and certification workshop series in FY 2010-2011. The workshop series for Contra Costa took place during the fall of 2010 and was well attended and received. Municipal and private landscaping business employees

attended the workshop and received their BFL IPM landscaping certification. The CCCWP is proud to promote these 'graduates' of the BFL program and will continue to encourage all municipal employees who apply pesticides to attend this valuable training. CCCWP funds have been set aside for FY 2011-2012 for BFL training and certification.

C.9.e – Track and Participate in Relevant Regulatory Processes

This provision of the MRP is one the CCCWP is proud to say it has already been implementing for several years. The essential requirements of this provision are to track the United States Environmental Protection Agency (USEPA) and the California Department of Pesticide Regulation's (DPR) regulatory initiatives and rules related to urban-uses of pesticides and actively participate in the shaping of regulatory efforts currently underway. This provision allows for cooperation among Permittees through the California Stormwater Quality Association (CASQA), BASMAA and/or the Urban Pesticide Pollution Prevention Project (UP3 Project). Recognizing that this approach is the most likely to result in meaningful changes in pesticide regulations, Permittees elected to continue on this course in FY 2010-2011 to achieve compliance with this provision. One change in FY 2010-2011 is that the oversight of this provision was removed from the purview of the BASMAA Monitoring and POCs Committee and instead given to the BASMAA Board of Directors (BOD). Two project scopes of work were developed and approved by the BASMAA BOD - one to fund the reporting element of this task and one to fund the actual work of tracking pesticide regulatory initiatives. These two (2) profiles were approved by the BASMAA BOD on June 23, 2011 and October 29, 2010, respectively.

The actual work of tracking and participating in the ongoing regulatory efforts related to pesticides was accomplished primarily through BASMAA member participation in the UP3 Project, as well as participation on CASQA's Pesticides Subcommittee. In addition, the CCCWP made direct contributions to the effort. CCCWP staff continued to serve as Co-chair of the CASQA Pesticides Subcommittee in FY 2010-2011 and the CCCWP provided funding directly to consultants to support the work of the subcommittee in the

amount of approximately $2,000. CCCWP staff has also actively participated in the UP3 Project since 2006. A summary of activities and accomplishments for FY 2010-2011 can be found in BASMAA's "*MRP Regional Supplement for POCs and Monitoring Annual Report for FY 2010/11*."

C.9.f – Interface with Contra Costa County Agricultural Commissioner

Following the adoption of the MRP in October 2009, CCCWP staff began working with Contra Costa Permittees to begin implementation of this provision. The CCCWP's MOC discussed this provision at length during FY 2009-2010 and worked to establish regulator communications and information sharing with Contra Costa County Agricultural Commissioner (CCCAC), who was unaware of this provision. In coordination with the CCCAG, municipalities and CCCWP staff, it was agreed CCCWP staff would act as a liaison in compiling and providing reports of improper pesticide use observed by municipalities to the CCCAG. During FY 2010-2011, no reports of improper pesticide use were observed. The CCCWP will continue to discuss efforts to observe, abate, and report improper pesticide usages to the CCCAC, and report on such efforts in the FY 2011-2012 Annual Report.

C.9.c. – Train Municipal Employees

CCCWP staff conducted a two (2) hour tailgate training meeting on June 30, 2011 on structural IPM. Topics during the tailgate meeting were NPDES requirements for IPM, IPM policies and programs, IPM philosophy, structural IPM as a discipline, structural IPM as it relates to stormwater, MRP pesticide reduction requirements, pesticides that threaten stormwater runoff, and two structural IPM examples (i.e., how to manage two common building pests - the Argentine ant and the German cockroach). Attendance was good and the tailgate was well received. A pre-test was given to the attendees and then followed by the training meeting a post test was given to the attendees. Results of the test were a score improvement of 20% or higher (scores from 65% rose to an average of 85-90%). The rise in scores suggests a better understanding of IPM

philosophy and IPM management skills.

C.9.b. - Continuous Improvement to Municipal IPM Programs

Provision C.9 was a new requirement for Contra Costa in the sense that a formal IPM program was not specifically required in previous NPDES permits. Many CCCWP Permittees had to developed new formal IMP programs. To assist these Permittees, CCCWP staff with oversight from the CCCWP MOC, developed a model IPM program, including IMP policies and standard operating procedures in FY 2009-2010 (please refer to the CCCWP's FY 2009-2010 annual report for further details). In response to Water Board staff review and comments on Section C.9 in the FY 2009-2010 Municipal Annual Reports, CCCWP staff conducted a thorough review of the model IPM program and policies distributed to the Permittees in FY 2009-2010, and determined it was consistent with the requirements contained in the adopted MRP. CCCWP staff also assisted Permittees in their internal review of their IPM programs, which Water Board staff requested be resubmitted with their FY 2010-2011 Annual Reports.

Conclusion

The CCCWP has approached pesticides toxicity control primarily through promotion of IPM methods, and direct involvement in the review and development of pesticide regulatory initiatives by USEPA and California DPR, which have the most potential to significantly reduce pesticide toxicity in urban creeks. IPM is promoted through development and adoption of municipal IPM programs and policies; and, education, training and certification programs for professional pesticide control operators and landscape contractors. As an example, the CCCWP is a member of BFL and hosts Bay Friendly Landscaping Training and Certification Programs, which educate landscapers about IPM and other green practices to reduce waste thus preventing stormwater pollution. With the adoption of the MRP, the CCCWP developed model programs and policies to assist Contra Costa Permittees. The CCCWP's FY 2009-2010 Annual Report provides further details regarding this work. Details regarding local

implementation of municipal IPM programs and policies are contained in the Individual Municipal Annual Reports.

CCCWP goals for FY 2011-2012 include providing another Bay Friendly Landscaping Certification and Training Workshop for landscape businesses and municipal staff; providing an EcoWise Certification and Training Workshop for structural pesticide applicators/businesses and municipal staff, continuing to support BASMAA's OWOW program; continuing to participate in the review and development of pesticide regulations and initiatives; conducting a regional advertising campaign targeting a broad audience on reducing the impact of urban pesticide use; and, working closely with Contra Costa Permittees to implement effective IPM programs.

SECTION 10 – PROVISION C.10 TRASH LOAD REDUCTION

Introduction

In FY 2010-2011, CCCWP staff in coordination with municipal representatives on the CCCWP's MOC participated with BASMAA members in regional development of: 1) a trash load reduction progress report submitted on behalf of all Permittees in February 2011; 2) trash baseline loading methodologies and estimates; 3) trash load reduction actions and tracking methodologies; 4) a model "Short Term Load Reduction Plan", which Permittees must prepare and submit by February 1, 2012; and, 5) annual reporting for regional trash load reduction compliance actions. A detailed reporting on these regional efforts are provided in BASMAA's "*Regional Pollutants of Concern (POC) Report for FY 2010-2011 and Monitoring Status Report for January – June 2011*", which was submitted separately by BASMAA on behalf of Contra Costa Permittees.

The remainder of this section highlights additional actions conducted specifically by the CCCWP under the oversight of the CCCWP's MOC, which is described in detail in previous Sections of this Annual Report (e.g., Section 2).

Accomplishments

During FY 2010-2011, the CCCWP's MOC was responsible for reviewing and providing input on the various BASMAA trash reduction activities, which are described in detail in BASMAA separate submittal referenced above. Like last year, the CCCWP MOC also assisted in providing a forum for sharing information and providing guidance to Contra Costa Permittees regarding: 1) implementation of their annual hot spot cleanup and assessments; 2) selection and installation of full trash capture devices; and, 3) participation in trash load source control initiatives. See the Individual Municipal Annual Reports for further details regarding hot spot cleanup and assessments.

Selection and Installation of Full Trash Capture Devices

The CCCWP MOC provided assistance and information to municipalities related to the selection and installation of trash capture devices. The MOC also helped coordinate municipal participation in the Association of Bay Area Governments (ABAG) Trash Grant, which secured federal American Recovery and Reinvestment Act (ARRA) funds for participating municipalities to purchase and monitor the effectiveness of various full trash capture devices. All but two (2) Contra Costa Permittees are participating in this trash grant. The selection and installation of full trash capture devices is ongoing and is scheduled to be completed by November 2012. Some of these full trash capture devices are being monitored to assist in the trash baseline loads development work being conducted regionally.

Trash Load Source Control Initiatives

California Product Stewardship Council - The CCCWP is a member of the California Product Stewardship Council (CPSC) and its mission to promote Extended Producer Responsibility (EPR) that shifts California's product waste management system from one focused on government funded and ratepayer financed waste diversion to one that relies on producer responsibility in order to reduce public costs and drive improvements in product design that promote environmental sustainability. This initiative advocates that the producers have the primary responsibility to establish, fund, and manage end of life systems for their products. The CCCWP supports the CPSC financially through membership fees equaling $2,500 a year and through direct participation in their associate meetings. Some of the accomplishments of the CPSC for FY 2010-2011 include:

- Passed three major pieces of legislation to begin Stewardship Programs on Paint AB1343 (Huffman) and Carpet AB 2398 (Perez) and removal of copper from brake pads Brake Pads SB346 (Kehoe);

- Provided interviews and expertise in over 30 press stories making local, statewide and national news;
- Presented their Second Annual “Arrow Awards” to recognize the efforts of companies who are leaders in product stewardship in California;
- Presented in Europe on EPR in the United States and worked to build strategic alliances with various international corporations including Staples, Coca-Cola and Nestle;
- Hosted and facilitated three (3) free public webinars on the paint stewardship law with technical support from PaintCare and financial support from their business partners at Amazon Paints and Visions Recycled paint; and,
- Presented via web to Global Product Stewardship Council, had six (6) meetings with product stewardship organizations, and various site tours in Switzerland-France-Germany. The presentations reached over 29,000 people in 2010-2011.

The CCCWP will continue to support and participant in the CPSC’s mission and efforts in FY 2011-2012.

Reusable Shopping Bag Ordinance - In late FY 2010-2011, the CCCWP MOC began discussions with representatives of the West Contra Costa Integrated Waste Management Authority (WCCIWMA), which is working with several West Contra Costa County municipalities to develop and implement an ordinance designed to promote use of reusable shopping bags. Discussions regarding the amount of “credits” given to a municipality adopting litter source control ordinances for problematic trash types is being developed regionally through BASMAA. Discussions regarding CCCWP involvement in a countywide reusable bag ordinance will take place and be reported in FY 2011-2012.

Conclusion

Provision C.10 mandates a goal of reducing trash loads from municipal storm drains by 100% by July 1, 2022. Achieving this mandated goal will require the support, commitment and investment of County taxpayers' dollars. The CCCWP is dedicated to reducing trash discharges from municipal storm drains and will continue working with regulators, municipal staff, elected and appointed officials, businesses, residents and other watershed stakeholders to identify and meet this aggressive goal in the most effective and efficient way possible. Goals for FY 2011/2012 include working with BASMAA's MOC to develop trash reduction guidance, calculate baseline trash loads, choose trash capture devices based on information sharing, explore financial assistance for trash reduction activities mandated by the MRP, and continue to facilitate the Program's MOC as a venue for trash reduction BMP development.

SECTION 11 – PROVISION C.11 MERCURY CONTROLS

Introduction

The majority of MRP requirements related to mercury are being addressed regionally through BASMAA and the RMC. Reporting on these elements of the MRP, for which there were deadlines in FY 2010-11, can be found in the BASMAA "*Regional Annual Report Supplement for POCs and Monitoring"* , which was submitted separately by BASMAA on behalf of Contra Costa Permittees. This section describes additional details about actions taken directly by the CCCWP in implementing these regional projects (see the section below titled "CCCWP Role in the Regionally Coordinated Projects"). In addition, descriptions of CCCWP-directed actions related to mercury are described below.

Accomplishments

Two provisions related to mercury which the CCCWP performed separately from BASMAA and the RMC in cooperation with our Permittees are C.11.a.i and C.11.a.ii.

C.11.a.i – Mercury Recycling Efforts

The CCCWP's Permittees collect household hazardous waste at 3 regional facilities throughout the county: Central Contra Costa Sanitary District (CCCSD), Delta Diablo Sanitation District (DDSD), and West County Wastewater District (WCWB). CCCSD serves the communities of Concord, Clayton, Martinez, Pleasant Hill, Orinda, Lafayette, Moraga, Walnut Creek, Danville, San Ramon and unincorporated county. DDSD serves Pittsburg, Antioch and Bay Point. WCWC serves Richmond, Pinole, El Sobrante and San Pablo.

In addition, the CCCWP collaborated with DDSD for several years to sponsor collection of mercury containing devices at OSH Hardware Stores in East County. Consumers can drop off their batteries and fluorescent bulbs free of charge at the participating stores.

C.11.a.ii – Mercury Collection

The types of data collected at each facility are slightly different as is the level of differentiation between types of mercury containing devices and the level of specificity in reporting the data. In the future, BASMAA will be developing methods to more carefully track all types of mercury containing devices and work with the hazardous waste facilities to change the way they track and report this data so that a more thorough accounting can be made.

In FY 2010-2011, CCCSD collected approximately 78 pounds of mercury, plus 37 pounds of mercury containing devices. DDSD collected approximately 10 pounds of mercury plus 2,082 pounds (a skewed amount because it includes the weight of containment drums) of mercury-containing devices. WCWD collected approximately 102 pounds of mercury plus 17 pounds of mercury containing devices. The amount of actual mercury recovered from these devices was not able to be determined because the data was not reported in a way which allowed the use of known conversion factors.

For a detailed breakdown by facility, see Attachment 11.1 in this Annual Report.

CCCWP Role in the Regionally Coordinated Projects

As stated previously, the majority of MRP requirements related to mercury are being addressed regionally through BASMAA and the RMC and reporting on these elements can be found in the BASMAA "*Regional Annual Report Supplement for POCs and Monitoring."* Nevertheless, in FY 2010-2011 the CCCWP, its staff, Permittees and consultants were active collaborators on implementation of various C.11 provisions as described below.

Clean Watersheds for a Clean Bay (CW4CB) is a grant-funded project that is anticipated to result in Permittee compliance with the following MRP Provisions that jointly address PCBs and mercury:

- C.11/12.c (CW4CB Tasks 2 and 3) - Pilot Projects to Investigate and Abate Mercury/PCB Sources;
- C.11/12.d (CW4CB Task 4) - Pilot Projects to Evaluate and Enhance Municipal Sediment Removal and Management Practices;
- C.11/12.e. (CW4CB Task 5) - Pilot Projects to Evaluate On-Site Stormwater Treatment via Retrofit; and,
- C.11/12.i (CW4CB Task 6) - Development of a Risk Reduction Program Implemented throughout the Region.

CW4CB is funded by a grant to BASMAA from the USEPA for $5 million. An additional $2 million in funds will be provided from BASMAA members, wastewater treatment agencies, and industrial dischargers to serve as a grant match.

CCCWP staff, consultants and the City of Richmond, participated actively in CW4CB by participating in monthly project team meetings in addition to more detailed investigations specific to Task 2, 3 and 5 as described below.

CW4CB Tasks 2 and 3

City of Richmond staff worked diligently and ahead of schedule with CCCWP consultants, Brown and Caldwell, on Tasks 2 and 3 of the grant. City of Richmond conducted investigations of properties in catchments draining into the Lauritzen Channel and the Parr Channel watersheds. Of 166 parcels identified in those watersheds, 62 parcels were inspected from outside the property line, and 13 were inspected onsite. Inspection procedures built upon lessons learned from similar investigations that have been conducted in the past in the Ettie Street catchment in

Alameda County. The focus of the inspections was to identify any sources of bare dirt on the property that could serve as a sediment source, and determine whether any known or suspected current or past activities could involve materials containing PCBs (i.e. transformers, wire insulation, hydraulic fluids, caulks and paints). Inspection results included field logs, photographs, site flow path sketches, and aerial photos from Google Earth. Inspection results were compiled in a simple Excel-based database. The City of Richmond and the CCCWP will coordinate with other programs and the CW4CB project management team in early FY 2011-2012 to share lessons learned from the site inspections, and to propose priorities for monitoring under CW4CB tasks.

CW4CB Task 5

Brown and Caldwell also provided in-kind services to the project team for Task 5 by researching and writing a complex and detailed Request for Qualifications (RFQ) for design firms to assist MRP Permittees with the design of treatment retrofits. This was necessary because the funding from USEPA came with strict requirements regarding outreach to Minority Business Enterprise and Disadvantaged Business Enterprises (MBE/DBE). Brown and Caldwell documented BASMAA's good faith effort in procurement of design contractors for work performed under the CW4CB grant. To ensure that the recipients list for the Request for Qualifications reached qualified MBE/DBEs, the following steps were taken: The Small Business Administration's Dynamic Small Business Database search engine was accessed at: http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm

The following search criteria were set:

1) Located in California
2) Registered with the San Francisco District SBA office (Code 0912)
3) NAICS code 541330 (Engineering Services)
4) The firm is at least one of: any minority owned, self-cert SDB, service-disabled veteran owned, veteran owned, women owned, women owned small business

(WOSB), economically disadvantaged WOSB, WOSB joint venture and/or economically disadvantaged WOSB joint venture;

The resulting list identified 401 firms and joint ventures. This list was screened by scrutinizing capabilities and narratives in the Small Business Association records, and where available, the firm's web page. Many types of specialty firms – marine engineering, biotech, computers, communications, etc. were quickly eliminated due to the fact that their skills were inappropriate for the tasks at hand. The remaining firms were more carefully vetted by looking for the appropriate qualifications and experience – specifically, design of bio-infiltration systems and other best management practices (BMPs) in urban settings. If a firm only showed vertical construction (bridges, roads, airports, etc.) they were eliminated because some evidence of experience and capability constructing retrofits in the ground that capture and infiltrate water was determined to be necessary.

The resulting screened list has 19 potential firms identified. The RFQ was mailed to those firms and the project team will select a firm or team of firms in the coming months to assist cities with actual design.

In total, CCCWP staff and consultants, and City of Richmond staff spent approximately 687 hours in FY 2010-2011 on direct participation in all elements of the CW4CB grant. These will be tracked and counted towards the CCCWP's grant match.

Conclusion

Work on the C.11 provisions for FY 2010-2011 was very extensive on both a regional level through BASMAA as well as on a CCCWP-level and Permittee level (i.e., City of Richmond). Tasks 2 and 3 of the CW4CB were largely completed, and significant work was accomplished on Task 5. The CCCWP and its consultants and Permittees will continue to advance the implementation of C.11 provisions in the coming fiscal year.

SECTION 12 – PROVISION C.12 PCB CONTROLS

Introduction

The majority of MRP requirements related to PCBs are being addressed regionally through BASMAA and the RMC. Reporting on these elements of the MRP, for which there were deadlines in FY 2010-2011, can be found in the BASMAA "*Regional Annual Report Supplement for POCs and Monitoring"* , which BASMAA submitted separately on behalf of Contra Costa Permittees. This section describes additional details about actions taken directly by the CCCWP in implementing these regional projects.

<u>CCCWP Role in Regionally Coordinated Projects</u>

As stated previously, the majority of MRP requirements related to mercury are being addressed regionally through BASMAA and the RMC. Nevertheless, in FY 2010-2011 the CCCWP, its staff and consultants, and Permittees were active collaborators on implementation of various C.12 provisions. The most significant effort was in implementation of various aspects of the CW4CB grant. These activities are thoroughly described in Annual Report Section 11 (Mercury) above, and since the actions described in C.11 also apply to PCBs, those actions will not be repeated here.

The CCCWP also furthered its compliance with C.12.a by providing a refresher training course in the identification of Mercury, PCB and Copper-containing materials for industrial inspectors. This refresher training course was part of a full-day inspector training workshop held on February 24, 2011. Topics covered included: an overview of the updated Model ERP and Model Business Inspection Plan, the Contra Costa Green Business certification program, sampling and assessing NOI facilities, continuing POC training with identifying mercury, PCBs, and copper in the field, stormwater compliance and enforcement case studies, and sewer overflows.

To comply with C.12.b, CCCWP staff and Permittees participated directly in the PCBs in Caulk Project (Project) managed by the San Francisco Estuary Partnership (SFEP) and funded by federal ARRA stimulus funds. The objective of the grant is to evaluate the effectiveness of management practices that address legacy caulks containing PCBs as measures to reduce PCB loadings to the Bay. CCCWP staff and Permittees participated in a stakeholder meeting held on October 26, 2010, and a workshop held on July 26, 2011. The purpose of the workshop was to perform mock implementation trials of the recently developed regulatory processes to discover any hurdles the proposed PCB controls may add to the demolition/renovation permitting process. The workshop included municipal staff with responsibility for this type of permitting.

Conclusion

Work on the C.12 provisions in FY 2010-2011 was very extensive on both a regional level through BASMAA as well as on a CCCWP-level and Permittee level (i.e., City of Richmond). Tasks 2 and 3 of the CW4CB were largely completed and significant work was accomplished on Task 5. The CCCWP and its consultants and Permittees will continue to advance the implementation of C.12 provisions in the coming fiscal year.

SECTION 13 – PROVISION C.13 COPPER CONTROLS

The MRP requirements related to copper are being addressed directly by Permittees or regionally through BASMAA. Reporting on regional elements conducted through BASMAA, for which there were deadlines in FY 2010-2011, can be found in the BASMAA *"Regional Annual Report Supplement for POCs and Monitoring"*, which was submitted separately by BASMAA on behalf of Contra Costa Permittees.

SECTION 14 – PROVISION C.14 PBDE, LEGACY PESTICIDES AND SELENIUM CONTROLS

MRP requirements related to PBDEs, legacy pesticides and selenium are being addressed regionally through BASMAA. Reporting on these elements of the MRP, for which there were deadlines in FY 2010-2011, can be found in the BASMAA "*Regional Annual Report Supplement for POCs and Monitoring*", which was submitted separately by BASMAA on behalf of Contra Costa Permittees.

SECTION 15 – PROVISION C.15 EXEMPTED AND CONDITIONALLY EXEMPTED DISCHARGES

Introduction

The CCCWP's MOC is tasked with, among other things, the review, development and coordination of any countywide and/or regional tasks conducted to assist Permittees with implementation of the mandates in Provision C.15. However, due to other competing priorities under the purview of the CCCWP MOC, no specific actions were conducted in FY 2010-2011.

Accomplishments

Though the CCCWP's MOC did not conduct any specific group activities to assist Permittees with compliance with Provision C.15, the CCCWP Permittees did approve and adopt in FY 2010-2011 the 5th Edition, Stormwater C.3 Guidebook. This guidebook outlines source controls, site design measures, and stormwater treatment and flow control requirements consistent with the mandates in Provision C.3. This guidance includes BMPs addressing the following discharges:

- Swimming Pool, Hot Tub, Spa, and Fountain Water Discharges (C.15.b.v.)
- Irrigation Water, Landscape Irrigation, and Lawn or Garden Watering Discharges (C.15.b.vi.)

Conclusion

This past year CCCWP's MOC and BASMAA's MOC were primarily focused on activities to implement the trash load reduction mandates in Provisions C.10. However, CCCWP MOC members have tentatively identified the need to coordinate regional review and development of the following in FY 2011-2012:

- Development of BMPs and procedures for emergency fire-fighting discharges;
- Outreach efforts to discourage individual residential car washing, and encouraging instead use of commercial car wash facilities; and,
- Identifying whether additional types or categories of dischargers not listed in C.15 should be conditionally exempt.

CONTRA COSTA CLEAN WATER PROGRAM
ORGANIZATIONAL STRUCTURE

Participants -- Antioch, Brentwood, Clayton, Concord, Danville, El Cerrito, Hercules, Lafayette, Martinez, Moraga, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, Walnut Creek, Contra Costa County, and Contra Costa County Flood Control & Water Conservation District

ADMINISTRATIVE COMMITTEE

DUTIES

- Administration
- Strategic Planning
- Personnel
- Budgetary
- Conflict Resolution

MANAGEMENT COMMITTEE

DUTIES

- Decision Making Body
- Strategic Planning
- Sets Policies / Directives
- Program Manager's Evaluation
- Approves / Appropriates Budget

STAFF

Tom Dalziel, (TD), IProgram Manager
Elisa Wilfong, (EW), Watershed Management Planning Specialist
Jamison Crosby, (JC), Watershed Management Planning Specialist
Michelle McCauley, (MM), Administrative Analyst
Valarie Wiley, (VW), Clerk - Temp

MONITORING COMMITTEE

DUTIES

- C.8 - Water Quality Monitoring
- C.9 - Pesticides Toxicity Control
- C.11 - Mercury Controls
- C.12 - Polychlorinated Biphenols (PCBs) Controls
- C.13 - Copper Controls
- C.14 - PBDEs, Legacy Pesticides and Selenium

DEVELOPMENT COMMITTEE

DUTIES

- C.3 - New Development and Redevelopment
- C.6 - Construction Site Control

PUBLIC INFORMATION / PARTICIPATION COMMITTEE

DUTIES

- C.7 - Public Information and Outreach
- C.9 Pesticides Toxicity Control
- Coordinaton of Program Outreach

MUNICIPAL OPERATIONS COMMITTEE

DUTIES

- C.2 - Municipal Operations
- C.4 - Industrial and Commercial Site Controls
- C.5 - Illicit Discharge Detention and Elimination
- C.9 - Pesticides Toxicity Control
- C.10 - Trash Reduction
- C.15 - Exempted and Conditonally Exempted Discharges

BASMAA MONITORING / POC COMMITTEE

PROGRAM REPRESENTATIVES

Jamison Crosby, Program Staff
Lynne Scarpa, City of Richmond
Alfredo Hurtado, City of Pittsburg

BASMAA DEVELOPMENT COMMITTEE

PROGRAM REPRESENTATIVES

Tom Dalziel, Program Staff
David Swartz, Contra Costa County
Frank Kennedy, City of Concord

BASMAA PUBLIC INFORMATION / PARTICIPATION COMMITTEE

PROGRAM REPRESENTATIVES

Michelle McCauley, Program Staff
Stephen Spedowfski, City of San Ramon
Dan Jordan, Contra Costa County

BASMAA MUNICIPAL OPERATIONS COMMITTEE

PROGRAM REPRESENTATIVES

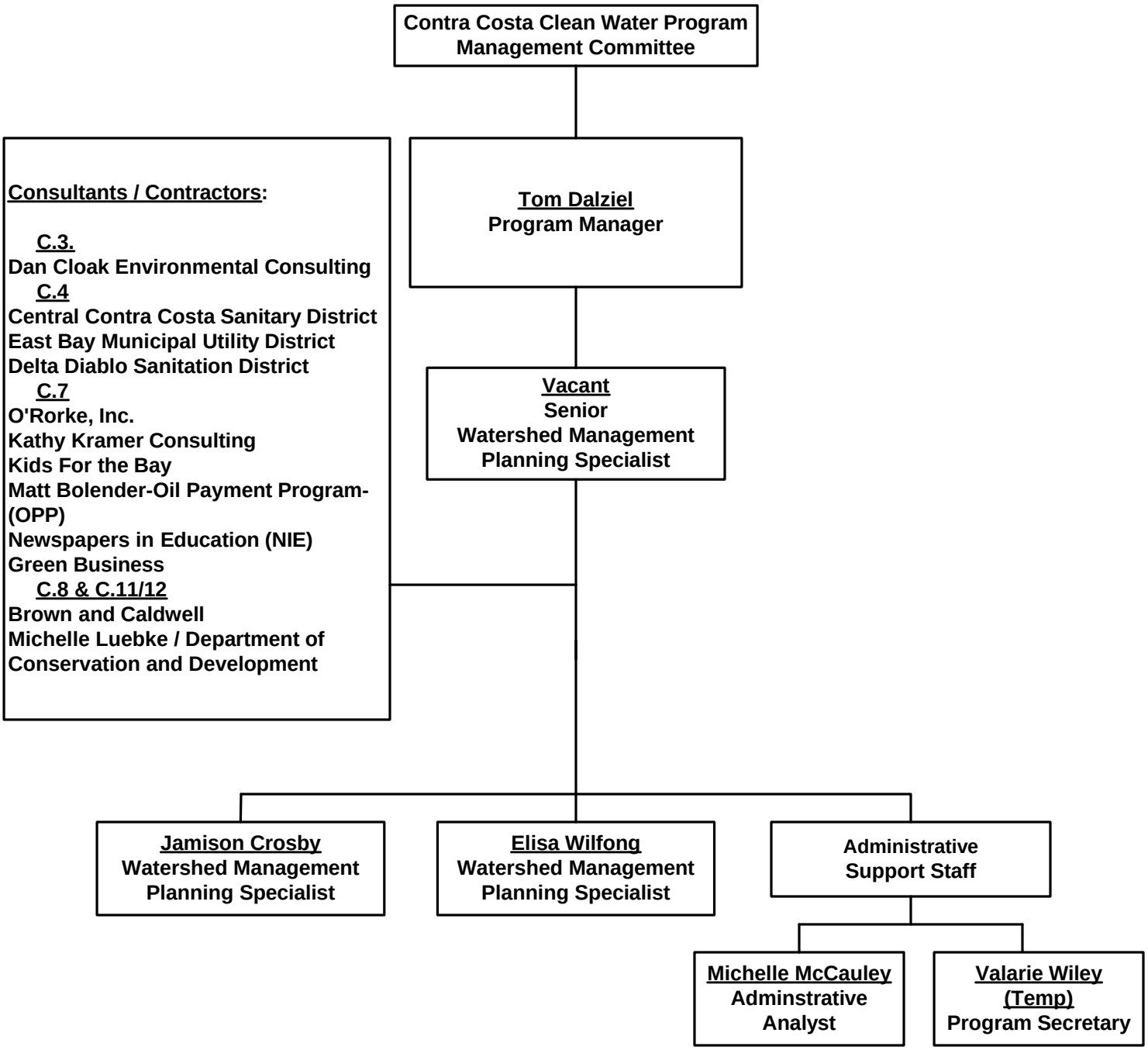
Elisa Wilfong, Program Staff
Rinta Perkins, City of Walnut Creek,
Tim Harless, City of Pinole

BASMAA TRASH COMMITTEE

PROGRAM REPRESENTATIVES

Elisa Wilfong, Program Staff
Rinta Perkins, City of Walnut Creek,
Tim Harless, City of Pinole

Contra Costa Clean Water Program Management



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Last Updated: August 29, 2011

ADMINISTRATIVE COMMITTEE
FY 2010-11 ATTENDANCE ROSTER

MUNICIPALITY	REPRESENTATIVE	JUL	AUG [3]	SEP	OCT [3]	NOV [3]	DEC [3]	JAN	FEB	MAR	APR [3]	MAY [3]	JUN	INDIV % ATT	MUNI % ATT
County Unincorp.	**David Swartz**												1	17%	**100%**
	Rich Lierly	1		1					1					50%	
	Charmaine Bernard							1		1				33%	
	Dan Jordan													0%	
Flood Control District	Mitch Avalon [2]	1		1				1	1	1			1	100%	**100%**
	Paul Detjens														
City of Pinole	Nancy Voisey	1												17%	**50%**
	Dean Allison							1	1					33%	
City of Pittsburg	**Jolan Longway**	1		1				1	1	1			1	100%	**100%**
	Laura Wright													0%	
City of Richmond	**Lynne Scarpa**			1				1	1	1			1	83%	**83%**
	Stephen Friday	1													
	Chad Davisson													0%	
City of San Ramon	Steven Spedowfski	1		1				1	1	1			1	100%	**100%**
City of Walnut Creek	Rinta Perkins [1]	1		1				1	1	1			1	100%	**100%**
														0%	
PROGRAM STAFF															
	Tom Dalziel	1		1				1	1	1			1		
	Jamison Crosby			1				1	1	1					
	Elisa Wilfong							1		1					
	Michelle McCauley	1		1				1	1	1			1		
NON-VOTING															
Town of Danville	Chris McCann	1											1		

[1] Chairperson

[2] Vice-Chairperson

[3] Meeting Cancelled

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DEVELOPMENT COMMITTEE
2010-11 ATTENDANCE ROSTER

MUNICIPALITY	REPRESENTATIVE	JUL	AUG [3]	SEP	OCT	NOV	DEC [3]	JAN	FEB	MAR	APR [3]	MAY	JUN	INDIV % ATT	MUNI % ATT
City of Antioch	**Phil Hoffmeister**			1					1	1		1	1	56%	**56%**
	Julie Haas-wajdowicz													0%	
City of Brentwood	**Jack Dhaliwal**	1		1	1	1						1		56%	**78%**
	Jeff Cowling								1	1				22%	
City of Clayton	**Laura Hoffmeister**	1						1				1	1	44%	**44%**
City of Concord	Jeff Roubal													0%	**89%**
	Libbey Bell													0%	
	Frank Kennedy [2]	1		1	1	1		1	1	1			1	89%	
Contra Costa County	**David Swartz [1]**			1	1			1	1	1		1	1	78%	**89%**
	Rich Lierly	1												11%	
City of El Cerritto	**Yvette Ortiz**			1		1		1						33%	**55%**
	Saied Aminian				1							1		22%	
City of Hercules	**Jeff Brown**	1		1		1		1	1					56%	**67%**
	Glenn Moniz												1	11%	
City of Lafayette	**Christine Sinnette**	1			1	1		1						44%	**44%**
City of Martinez	**Khalil Yowakim**	1			1	1		1	1	1				67%	**67%**
	Tim Tucker													0%	
Town of Moraga	Frank Kennedy			1										11%	**100%**
	John Sherbert	1			1	1		1	1	1		1	1	89%	
City of Oakley	**Frank Kennedy**	1		1	1	1		1	1	1			1	89%	**89%**
City of Orinda	**Cathleen Terentieff**			1	1	1		1	1	1		1	1	89%	**89%**
City of Pittsburg	**Majeed Bahri**	1		1	1	1		1	1	1		1	1	100%	**100%**
	Alfredo Hurtado													0%	
PROGRAM STAFF															
	Tom Dalziel	1		1	1	1		1	1	1		1	1		
	Dan Cloak	1		1	1	1		1	1	1		1	1		

DEVELOPMENT COMMITTEE
2010-11 ATTENDANCE ROSTER

NON-VOTING															
City of Danville	**Chris McCann**	1		1					1	1			1		
City of Pleasant Hill	**Rod Wui**														
City of Richmond	**Jay Ghandi**									1					
	Lynne Scarpa					1							1		
City of San Pablo	Karineh Samkian														
City of San Ramon	**Chris Low**					1			1			1	1		
	Steven Spedowfski														
City of Walnut Creek	Carlton Thompson			1	1	1						1	1		
	Scott Wikstrom								1						
	Diana Walker														

(1) Chairperson
(2) Vice-Chairperson
(3) Meeting Cancelled

MANAGEMENT COMMITTEE
FY 2010-11 ATTENDANCE ROSTER

MUNICIPALITY	REPRESENTATIVE	JUL	AUG (3)	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	INDIV % ATT	MUNI % ATT
City of Antioch	**Phil Hoffmeister**	1		1	1	1	1	1	1	1	1	1	1	100%	**100%**
	Julie Haas-Wajdowicz											1		9%	
City of Brentwood	Jeff Cowling													0%	**82%**
	Jack Dhaliwal	1		1	1	1		1	1	1	1		1	82%	
City of Clayton	Kristen Burger													0%	
	Laura Hoffmeister	1				1	1	1	1	1	1	1	1	82%	**82%**
City of Concord	Jeff Roubal			1										9%	**100%**
	Libbey Bell				1									9%	
	Frank Kennedy	1				1	1	1	1	1	1	1	1	82%	
Town of Danville	**Christine McCann**	1		1	1	1	1	1	1	1		1	1	91%	**91%**
	Michael Stella													0%	
City of El Cerrito	**Jerry Bradshaw**							1	1	1		1	1	45%	
	Garth Schultz	1		1	1	1	1							45%	**91%**
City of Hercules	Erwin Blancaflor							1						9%	**91%**
	John McGuire												1	9%	
	Jose Pacheco	1		1	1	1	1		1	1		1		73%	
City of Lafayette	**Donna Feehan**	1		1	1	1	1	1		1	1	1	1	91%	**91%**
	Ron Lefler													0%	
City of Martinez	**Alex Stroup**			1	1				1	1				36%	**91%**
	Tim Tucker					1	1	1			1	1	1	55%	
Town of Moraga	Frank Kennedy	1												9%	**100%**
	John Sherbert						1			1				18%	
	Jill Mercurio			1	1	1		1	1		1	1	1	73%	
City of Oakley	**Frank Kennedy**	1		1	1	1	1	1	1	1	1	1	1	100%	**100%**
	Jason Vogan													0%	
City of Orinda	**Cathy Terentieff**	1		1	1	1	1	1	1	1	1	1	1	100%	**100%**
	Paul Lang													0%	
City of Pinole	Nancy Voisey													0%	**72%**
	Dean Allison						1	1	1	1	1			45%	
	Frank Kennedy				1	1	1						1	36%	
City of Pittsburg	Jason Burke													0%	**100%**
	Jolan Longway	1		1	1	1	1	1	1	1	1	1	1	100%	

MANAGEMENT COMMITTEE
FY 2010-11 ATTENDANCE ROSTER

City of Pleasant Hill	**Rod Wui**	1		1	1	1	1	1	1	1	1		1	91%	**91%**
														0%	
City of Richmond	**Lynne Scarpa**			1	1	1	1	1	1	1		1	1	82%	**91%**
	Chad Davisson	1												9%	
City of San Pablo	**Karineh Samkian**	1		1	1	1	1	1					1	64%	**100%**
	Adele Ho								1	1	1	1		36%	
City of San Ramon	**Steven Spedowfski** [2]	1		1	1	1	1	1	1	1	1		1	91%	**91%**
	Maria Robinson													0%	
City of Walnut Creek	**Rinta Perkins** [1]	1		1	1	1	1	1	1	1	1	1		91%	**100%**
	Scott Wikstrom													0%	
	Steve Waymire												1	9%	
Contra Costa County	**Rich Lierly**				1	1	1	1	1	1			1	64%	**100%**
	Charmaine Bernard	1		1							1	1		36%	
Flood Control	Paul Detjens	1		1	1	1	1	1		1	1		1	82%	**100%**
	Mike Carlson												1	9%	
	Mitch Avalon								1		1	1		25%	
PROGRAM STAFF															
	Tom Dalziel	1		1	1	1	1	1	1	1	1	1	1		
	Jamison Crosby	1		1	1	1	1	1	1	1	1	1	1		
	Elisa Wilfong						1	1	1	1	1	1	1		
	Michelle McCauley	1		1	1	1	1	1	1	1	1	1	1		
	Kristen Hardeman			1						1					

[1] Chairperson

[2] Vice- Chairperson

[3] Meeting cancelled

MONITORING COMMITTEE
2010-11 ATTENDANCE ROSTER

MUNICIPALITY	REPRESENTATIVE	JUL[3]	AUG[3]	SEP	OCT	NOV [3]	DEC	JAN	FEB	MAR	APR	MAY	JUN	INDIV % ATT	MUNI % ATT
City of Antioch	**Phil Hoffmeister [2]**			1	1			1	1	1		1	1	88%	**88%**
	Julie Haas-Wajdowicz													0%	
Contra Costa County	**Charmaine Bernard**				1		1	1	1	1		1	1	88%	**100%**
	Nancy Stein			1										13%	
City of Richmond	**Lynne Scarpa**			1	1		1	1	1	1		1	1	100%	**100%**
	Jenny Oorbeck													0%	
City of Pittsburg	**Alfredo Hurtado [1]**			1	1		1	1	1	1		1	1	100%	**100%**
														0%	
City of Walnut Creek	Michael Hawthorne													0%	
	Rinta Perkins			1	1		1	1	1	1		1	1	100%	**100%**
PROGRAM STAFF															
	Elisa Wilfong														
	Jamison Crosby			1	1		1	1	1	1		1	1		
	Michelle Luebke														
	Michelle McCauley			1	1		1	1	1	1		1	1		

[1] Chairperson

[2] Vice-Chairperson

[3] Meeting Cancelled

MUNICIPAL OPERATIONS COMMITTEE
2010-11 ATTENDANCE ROSTER

MUNICIPALITY	REPRESENTATIVE	JUL	AUG[3]	SEP	OCT	NOV	DEC	JAN	FEB[3]	MAR	APR	MAY	JUN	INDIV % ATT	MUNI % ATT
City of Antioch	**Roger Clarke**			1			1	1		1				44%	**100%**
	Rose Ramirez						1			1	1	1		44%	
	Phil Hoffmeister	1								1			1	33%	
City of Brentwood	**Jeff Cowling**						1					1		22%	**66%**
	Kelly Martinez			1	1						1	1		44%	
City of Concord	**Jeff Roubal**	1												11%	**66%**
	AJ Kennedy												1	11%	
	Jesse Crawford				1		1	1				1		44%	
Contra Costa County[1]	**Charmaine Bernard**	1		1	1		1	1		1	1	1	1	100%	**100%**
	David Swartz									1				11%	
	Alex Anaya	1								1				22%	
Town of Danville	Chris McCann	1		1	1		1	1		1	1	1	1	100%	**100%**
	Jim Parke													0%	
City of El Cerrito	**Jose Jaramillo**												1	11%	**11%**
	Bill Driscoll													0%	
City of Hercules	**Glenn Moniz**	1		1	1		1	1		1	1	1		89%	**100%**
	Misael Gomez			1	1		1	1						44%	
City of Lafayette	**Ron Lefler**													0%	**89%**
	Donna Feehan													0%	
	David Terhune	1		1	1		1	1		1	1	1		89%	
City of Pinole	**Patrick Bowie**	1			1			1				1		44%	**100%**
	Tim Harless	1		1	1			1		1	1	1		78%	
City of Pittsburg	**Walter Pease**						1							11%	**89%**
	Majeed Bahri											1		11%	
	Jolan Longway												1	11%	
	Bobby Joaquin							1						11%	
	Ramona Anderson			1	1					1	1			44%	

MUNICIPAL OPERATIONS COMMITTEE
2010-11 ATTENDANCE ROSTER

MUNICIPALITY	REPRESENTATIVE	JUL	AUG[3]	SEP	OCT	NOV	DEC	JAN	FEB[3]	MAR	APR	MAY	JUN	INDIV % ATT	MUNI % ATT
City of San Pablo	**Karineh Samkian**	1		1			1							33%	**77%**
	John Medlock							1		1	1	1		44%	
City of Walnut Creek	**Rich Payne**			1	1		1	1			1		1	67%	**100%**
	Michael Hawthorne	1												11%	
	Rinta Perkins	1					1			1		1		44%	
PROGRAM STAFF															
	Elisa Wilfong						1	1		1	1	1	1		
	Jamison Crosby	1		1	1		1								
	Michelle McCauley	1		1	1		1	1		1		1			
NON-VOTING															
County Ag Commision	Larry Yost				1		1								
County Ag Commision	Vince Guise						1								
City of Clayton	Mark Janney														
Town of Moraga	John Sherbert				1		1	1		1	1		1		
City of Oakley	AJ Kennedy				1		1	1					1		
City of Orinda	Cathy Terrentieff	1					1	1							
City of Orinda	Paul Lang										1				
City of Pleasant Hill	Rod Wui														
City of Richmond	Lynne Scarpa						1	1							
City of San Ramon	Steven Spedowfski			1	1		1	1							

(1) Chairperson

(2) Vice-Chairperson

(3) Meeting Cancelled

APPENDIX "C"

PUBLIC INFORMATION / PARTICIPATION COMMITTEE
2010-11 ATTENDANCE ROSTER

MUNICIPALITY	REPRESENTATIVE	JUL	AUG	SEP	OCT	NOV (3)	DEC	JAN	FEB	MAR	APR	MAY	JUN	INDIV % ATT	MUNI % ATT
City of Antioch	**Julie Haas-Wajdowicz (1)**	1	1	1	1		1	1	1	1	1	1		91%	**91%**
	Phil Hoffmeister													0%	
Flood Control District	**CeCe Sellgren**	**1**	1		1		1	1			1	1	1	73%	**73%**
	Mitch Avalon													0%	
City of Pittsburg	**Laura Wright (2)**	1		1	1		1	1		1	1		1	73%	**100%**
	Jolan Longway											1		9%	
City of Pleasant Hill	**Rod Wui**	1	1	1	1		1	1		1	1			73%	**73%**
	Ann Page										1			9%	
	Steve Wallace													0%	
City of Richmond	Chad Davisson													0%	**91%**
	Lynne Scarpa	1	1	1	1		1	1	1	1	1	1		91%	
City of San Ramon	**Steven Spedowfski**	1	1	1	1		1	1	1	1	1	1	1	100%	**100%**
	Robin Bartlett													0%	
Contra Costa County	**Dan Jordan**	1	1		1		1	1	1		1		1	73%	**91%**
	David Swartz									1		1		18%	
PROGRAM STAFF															
	Tom Dalziel											1			
	Elisa Wilfong														
	Valarie Wiley				1							1			
	Michelle McCauley	1	1	1	1		1	1	1	1	1	1	1		

(1) Chairperson

(2) Vice-Chairperson

(3) Meeting Cancelled

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TOPLINE REPORT
CCCWP Tracking Study

For
O'Rorke, Inc
By Nichols Research, Inc.

June, 2011

Nichols Research, Inc., 39141 Civic Center Drive, Suite 425, Fremont, CA 94538
www.nicholsresearch.com

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Litter and Pollution

Q.1 Do you think litter impacts/pollutes local water bodies?

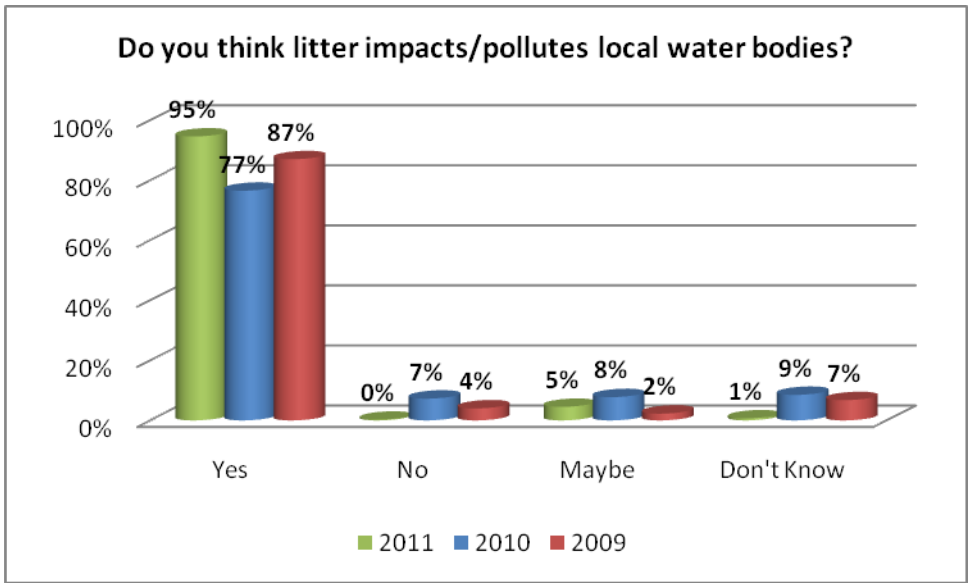
A greater percentage of respondents, **94.5%**, indicate ***yes*** to this question than in 2010, **76.5%,** or the **87%** in 2009. **4.5%** of the returned mailers indicate ***maybe***, resulting in a combined total of **99%** ***yes*** and ***maybe*** for 2011. This percentage is higher than the combined ***yes*** and ***maybe*** answers from 2010 which was **85%** and 2009 which was **91%.**

Only 1 person indicates ***no*** to this question and 3 say ***don't know***. A much lower number of respondents than said ***no*** or ***don't know*** in 2010 and 2009.

Residents living in the **West** and **Unincorporated Area** are slightly more likely to say ***yes*, 99%,** than those in the other three areas of the county and are less likely to say ***maybe.***

Age does not seem to be a significant factor for the answer to this question but it is interesting to note that ALL respondents aged **18-29** answer ***yes.***

Caucasians are a little less likely to say ***yes*, 91%**, than other ethnicities, with **100%** of **African Americans**, **96%** of **Hispanics** and **93%** of **Asians** saying ***yes.***



Q.2 How high would you rate your concern about litter polluting our water and water bodies?

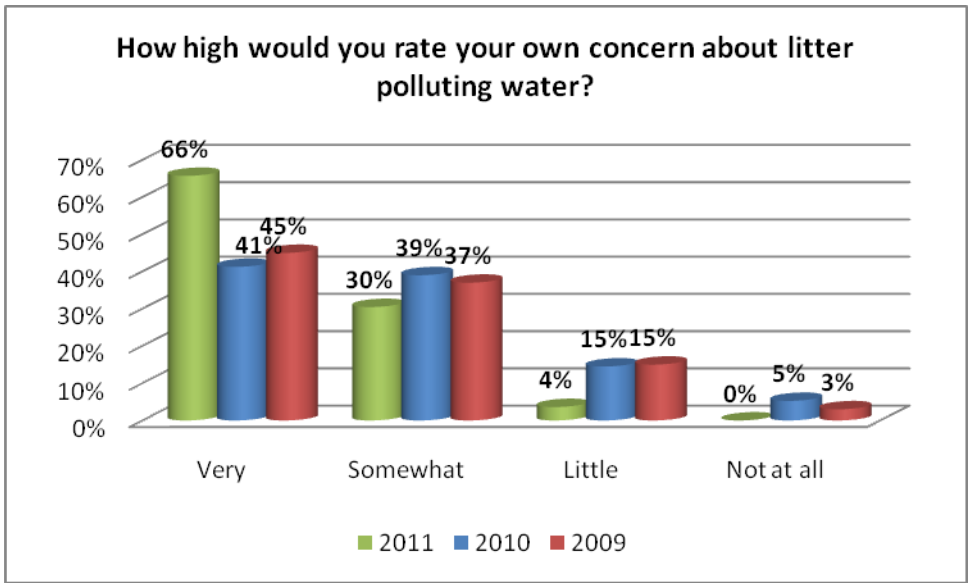
66% of residents say they would rate their concern about litter polluting water ***very*** high, **31%** say ***somewhat*** high, **4%** say a ***little***. None of the respondents indicate ***not at all*** concerned.

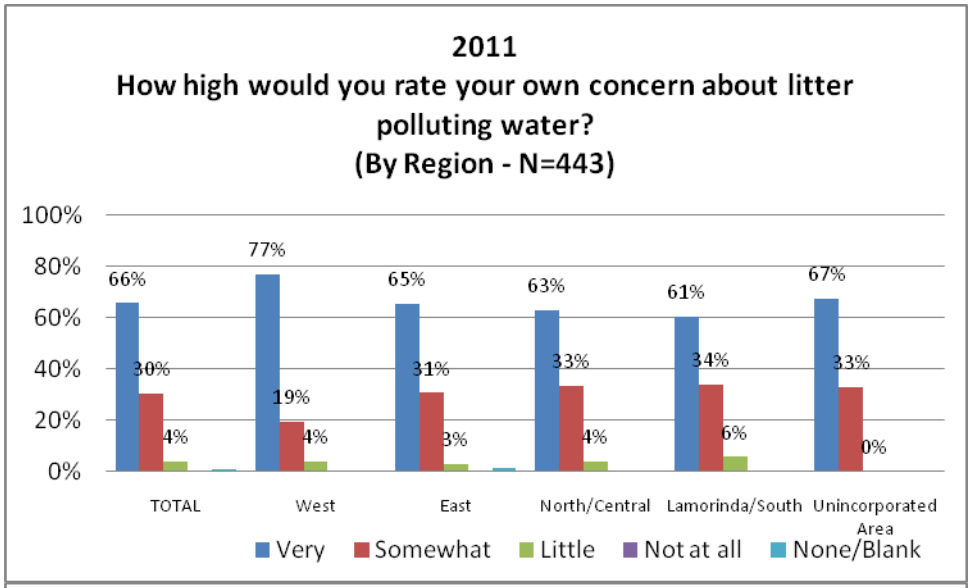
As the chart below shows, these responses indicate more concern about litter polluting water than in 2010 and 2009.

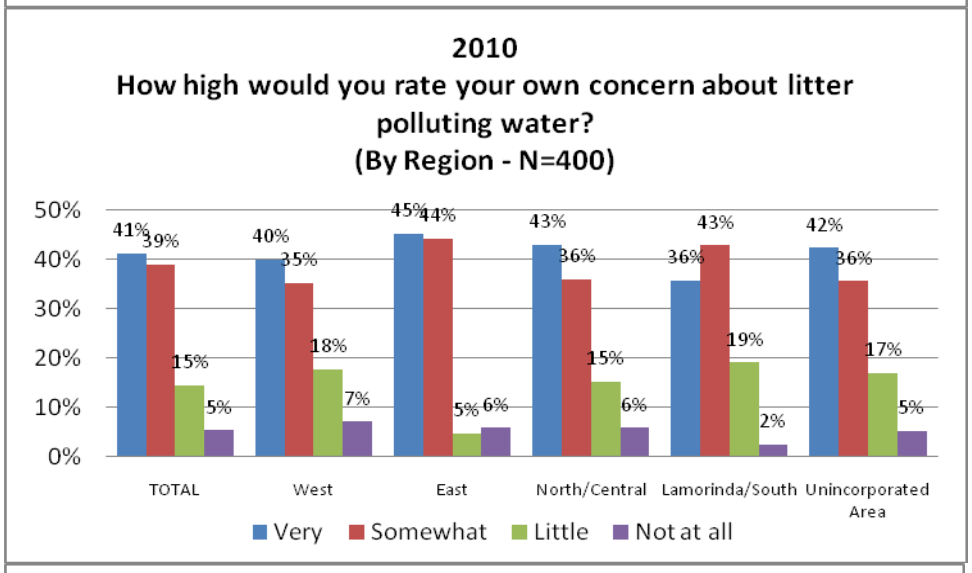
The percentage of **Asians, 80%**, saying ***very*** is higher than **African Americans**, **67%**, **Caucasians**, **67%**, or **Hispanics, 54%.** This is different than the 2010 and 2009 findings when **37%** of **Caucasians** and **38%** of **Asians** were less likely to say ***very*** concerned than **African Americans**. Oddly, of the three respondents who identified themselves as **Native Americans**, two, **67%**, responded ***little*** and only one responded ***very***.

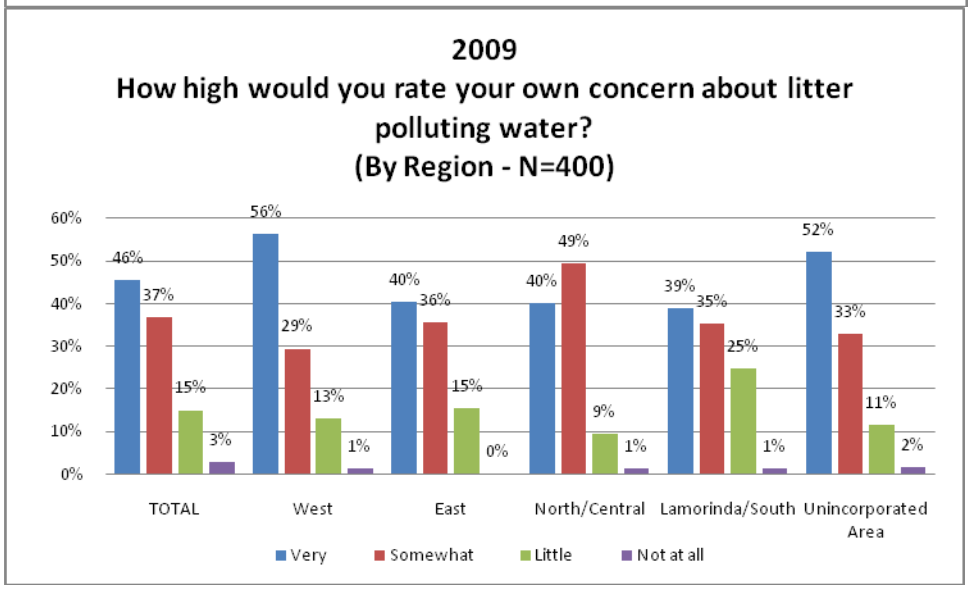
Residents of the **West** part of Contra Costa County, **77%**, indicate ***very*** more than residents in other areas; **East**, **65%**, **Lamorinda/South 61%**, **North/Central**, **63%** and **Unincorporated Area, 67%.**

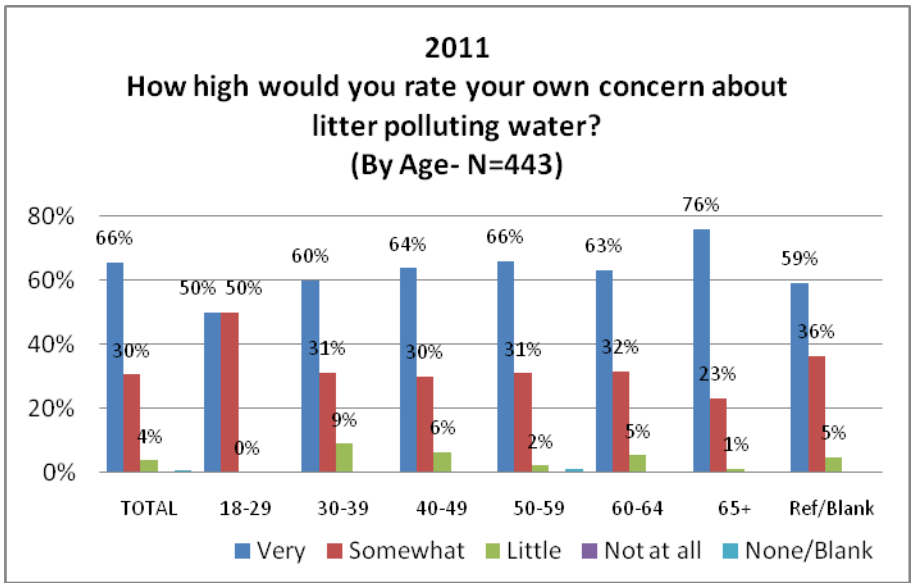
18-29 year olds are least likely to indicate ***very***, **50%,** and those **65 years** and older are most likely, **76%**. **30-39** year olds, **9%** and **40-49** year olds, **6%**, are more likely to say ***little***. All other age groups are fairly consistent in their answers. In 2010 respondents' ages did not seem to make much of a difference in how they answered this question.




2011
How high would you rate your own concern about litter polluting water?
(By Region - N=443)
100%
80%
60%
40%
20%
0%
66%
30%
4%
77%
19%
4%
65%
31%
3%
63%
33%
4%
61%
34%
6%
67%
33%
0%
TOTAL
West
East
North/Central
Lamorinda/South
Unincorporated Area
Very
Somewhat
Little
Not at all
None/Blank


2010
How high would you rate your own concern about litter polluting water?
(By Region - N=400)
50%
40%
30%
20%
10%
0%
41%
39%
15%
5%
40%
35%
18%
7%
45%
44%
5%
6%
43%
36%
15%
6%
36%
43%
19%
2%
42%
36%
17%
5%
TOTAL
West
East
North/Central
Lamorinda/South
Unincorporated Area
Very
Somewhat
Little
Not at all


2009
How high would you rate your own concern about litter polluting water?
(By Region - N=400)
60%
50%
40%
30%
20%
10%
0%
46%
37%
15%
3%
56%
29%
13%
1%
40%
36%
15%
0%
40%
49%
9%
1%
39%
35%
25%
1%
52%
33%
11%
2%
TOTAL
West
East
North/Central
Lamorinda/South
Unincorporated Area
Very
Somewhat
Little
Not at all


2011
How high would you rate your own concern about litter polluting water?
(By Age- N=443)
80%
60%
40%
20%
0%
66%
30%
4%
50%
50%
0%
60%
31%
9%
64%
30%
6%
66%
31%
2%
63%
32%
5%
76%
23%
1%
59%
36%
5%
TOTAL
18-29
30-39
40-49
50-59
60-64
65+
Ref/Blank
Very
Somewhat
Little
Not at all
None/Blank

Awareness of Reports/Advertising/Information About Litter

Q.3 In the past year, have you heard or seen any information about how litter travels and builds up and what's being done to protect your local bodies from litter?

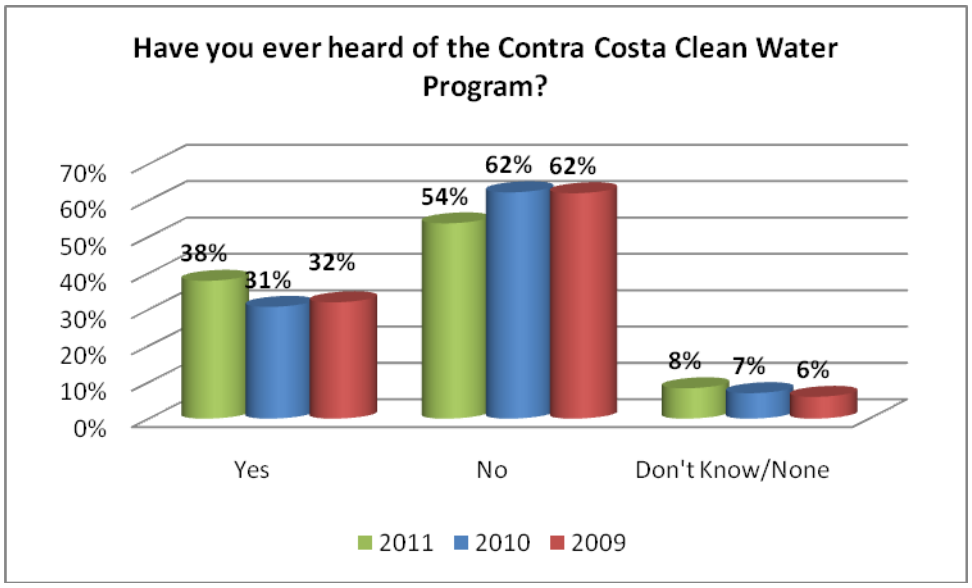
45% of the respondents indicate ***yes*** they have heard or seen information, **39%** say ***no,*** **11%** ***maybe*** and **5%** ***don't know.*** There is a significant increase in the percentage of people who say they have seen information compared to both 2010, **31%**, and 2009, **33%**, while there is a decrease in the percentage of those who have not (**66%** in 2010 and **65%** in 2009).

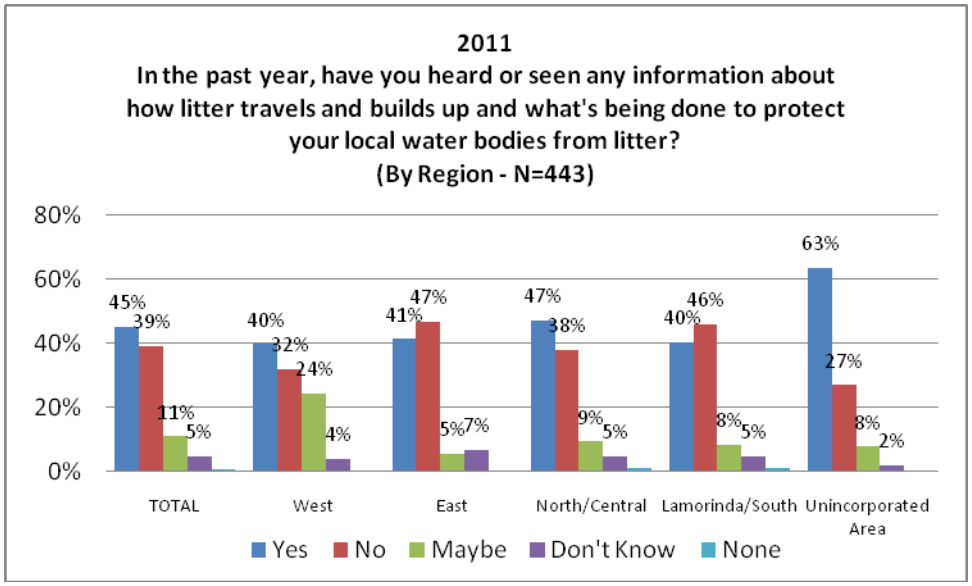
Residents of the **North/Central** region are more likely, **47%**, to have seen information than residents of the other areas and **63%** of respondents in the **Unincorporated Area**, say ***yes.***

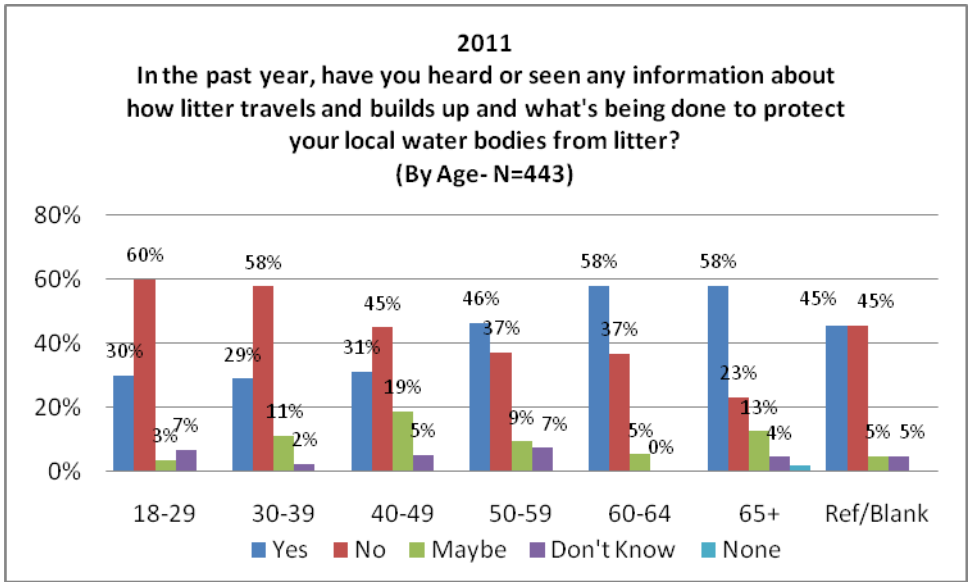
Residents of the **West** report ***maybe*** much more, **24%**, than residents of the other areas where the percentage is **under 10%**. This is interesting because in 2010 residents in the **West** were more likely to say ***no*** than residents of other counties whereas residents of the same part of the county were most likely to say **yes** in 2009**.**

Consistent with past years, older respondents aged **60+** are much more likely to say ***yes*** they have seen information in the past year. **40-49** year olds are more likely to say ***maybe***, and both **18-29** year olds and **50-59** year olds are more likely than other age group to say ***don't know***. Curiously, none of the **60-64** year olds say ***don't know***.

Caucasians are more likely, **53%**, to say ***yes*** than other respondents; **African Americans**, **33%, Asian**, **40%,** and **Hispanic**, **35%**.




2011
In the past year, have you heard or seen any information about how litter travels and builds up and what's being done to protect your local water bodies from litter?
(By Region - N=443)
80%
60%
40%
20%
0%
45%
39%
11%
5%
40%
32%
24%
4%
41%
47%
5%
7%
47%
38%
9%
5%
40%
46%
8%
5%
63%
27%
8%
2%
TOTAL
West
East
North/Central
Lamorinda/South
Unincorporated Area
Yes
No
Maybe
Don't Know
None


2011
In the past year, have you heard or seen any information about how litter travels and builds up and what's being done to protect your local water bodies from litter?
(By Age- N=443)
80%
60%
40%
20%
0%
30%
60%
3%
7%
29%
58%
11%
2%
31%
45%
19%
5%
46%
37%
9%
7%
58%
37%
5%
0%
58%
23%
13%
4%
45%
45%
5%
5%
18-29
30-39
40-49
50-59
60-64
65+
Ref/Blank
Yes
No
Maybe
Don't Know
None

Q.4 Where did you hear or see this information? Please circle all that apply.

Respondents were permitted to give multiple answers to this question and a total of 757 answers were given. The highest percentage has seen information about how litter travels on the ***TV,* 42%**, which is almost identical to 2010 at **41%**. The next highest percentage is ***newspapers*** and ***stenciled storm drains*** at **25%** each, followed by the ***internet***, **15%, *magazines,* 13%**, ***radio***, **11%**, ***friends/relatives/neighbors***, **9%, *billboards***, **8%**, ***government agencies***, **6%, *school programs*** and ***bus signs***, **5%** each.

The percentages for all media types, except ***newspaper,*** (currently **25%** and **31%** in 2010), are higher than in 2010. The ***internet***, (currently **25%** and **2%** in 2010), ***stenciled storm drains***, (currently **25%**, and **10%** in 2010) and ***magazines,*** (currently **13%** and **2%** in 2010) have the most substantial increases.

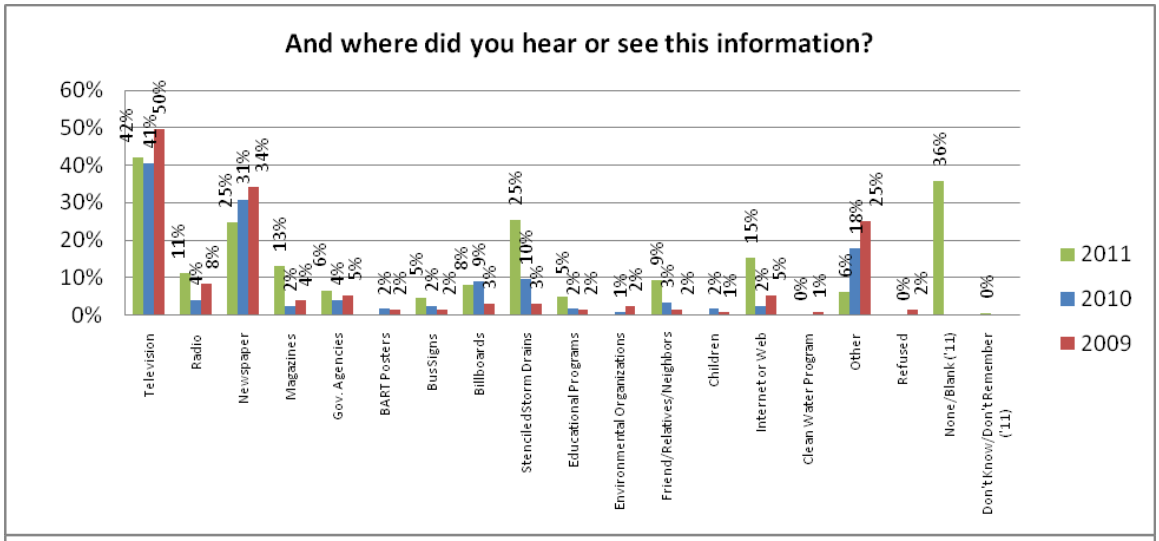
Overall, respondents over the age of **60** are much more likely to indicate all media types except ***bus signs***, ***billboards***, ***internet*** and ***school programs*** than respondents in other age groups; and, exceptionally higher for ***newspapers*** than other age groups. Respondents between **18-29** years are significantly less likely to say ***newspapers*** or ***stenciled storm drains*** and more likely to say ***internet*** and ***government agencies*** than the other age groups.

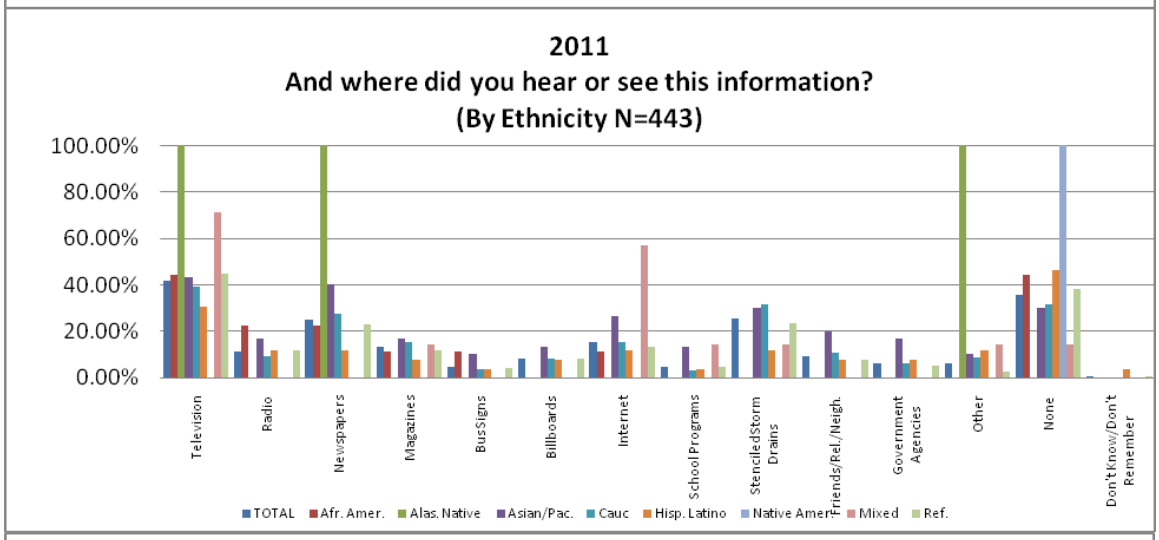
Residents from the **Unincorporated Area** of the county are much more likely to say ***bus signs***, **10%**, and residents of the **Lamorinda/South** are least likely, less than **1%**. Residents of the **Lamorinda/South** are also much less likely to have heard information on the ***radio***, **6%**, than those who live in the **North/Central** area, **16%**, or **Unincorporated Area**, **15%**. Respondents from **Lamorinda/South** are less likely to say **government agencies**, less than **1%**, than residents of the **West**, **10%** or **North/Central**, **9%.**

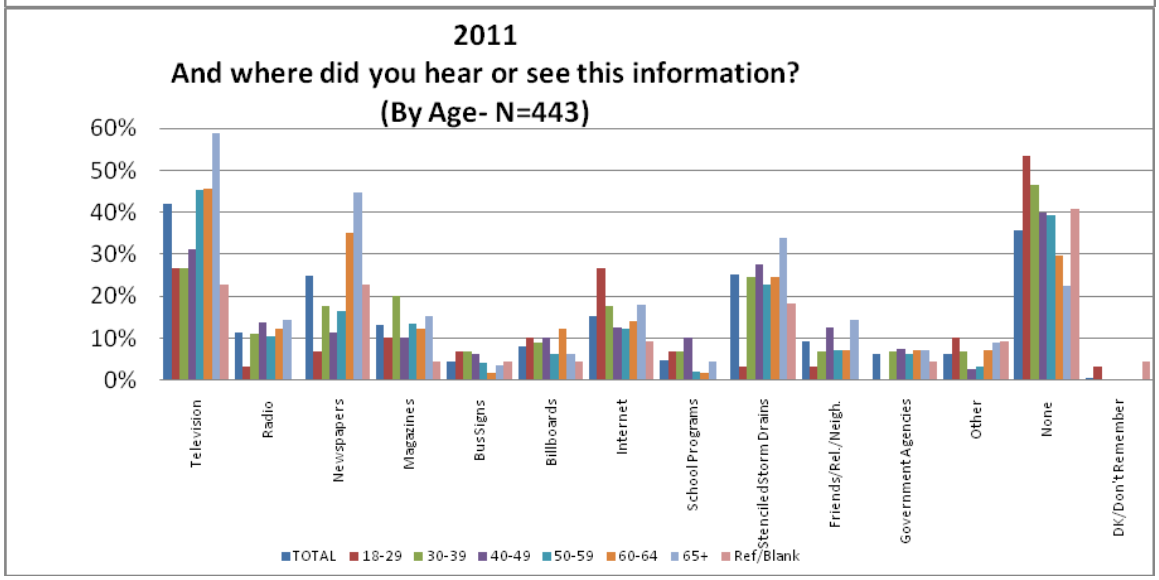
Hispanic respondents are less likely than others to say **television**, **31%**, and **newspapers**, **12%,** while **Asians** are more likely to say **newspapers**, **40%**, **internet**, **27%**, and **government agencies, 17%.**

Asians, 30%, and **Caucasians, 31%,** indicate **stenciled storm drains** more than other ethnicities, whereas no **African Americans** and only **12%** of **Hispanics** report **stenciled storm drains.**

Of the respondents who say they have heard or seen information someplace else, consistent with prior years, most indicate they received a flyer, postcard or newsletter in the mail.


And where did you hear or see this information?
60%
50%
40%
30%
20%
10%
0%
42% 41% 50%
11% 4% 8%
25% 31% 34%
13% 2% 4% 6%
4% 5%
2% 2%
5% 2% 2%
8% 9% 3%
25% 10% 3%
5% 2% 2%
1% 2%
9% 3% 2%
2% 1%
15% 2% 5%
0% 1%
6% 18% 25%
0% 2%
36%
0%
Television
Radio
Newspaper
Magazines
Gov. Agencies
BART Posters
BusSigns
Billboards
Stenciled Storm Drains
Educational Programs
Environmental Organizations
Friend/Relatives/Neighbors
Children
Internet or Web
Clean Water Program
Other
Refused
None/Blank ('11)
Don't know/Don't Remember ('11)
2011
2010
2009


2011
And where did you hear or see this information?
(By Ethnicity N=443)
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
Television
Radio
Newspapers
Magazines
BusSigns
Billboards
Internet
School Programs
Stenciled Storm Drains
Friends/Rel./Neigh.
Government Agencies
Other
None
Don't know/Don't Remember
TOTAL
Afr. Amer.
Alas. Native
Asian/Pac.
Cauc
Hisp. Latino
Native Amer.
Mixed
Ref.


2011
And where did you hear or see this information?
(By Age- N=443)
60%
50%
40%
30%
20%
10%
0%
Television
Radio
Newspapers
Magazines
BusSigns
Billboards
Internet
School Programs
Stenciled Storm Drains
Friends/Rel./Neigh.
Government Agencies
Other
None
DK/Don't Remember
TOTAL
18-29
30-39
40-49
50-59
60-64
65+
Ref/Blank

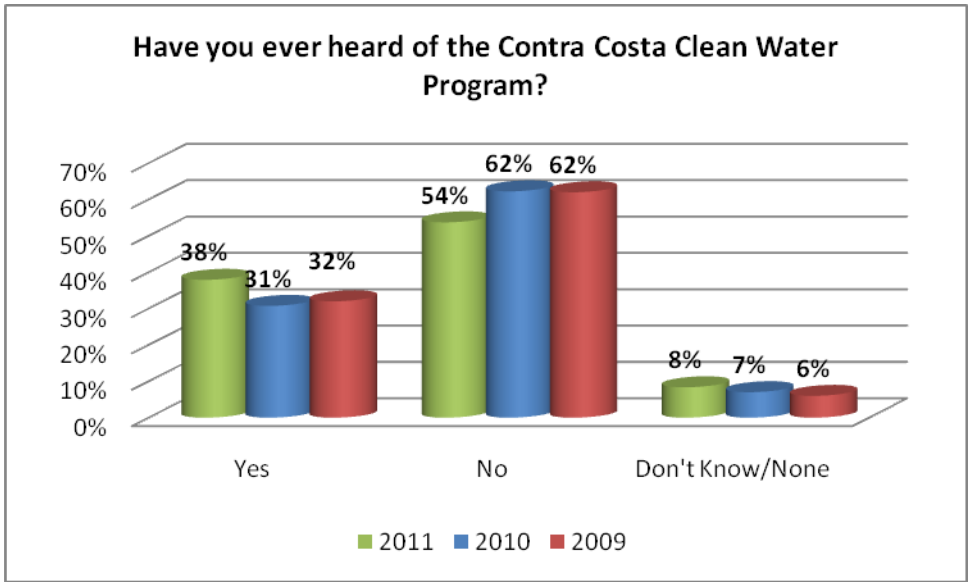
Awareness of the Contra Costa Clean Water Program and Website

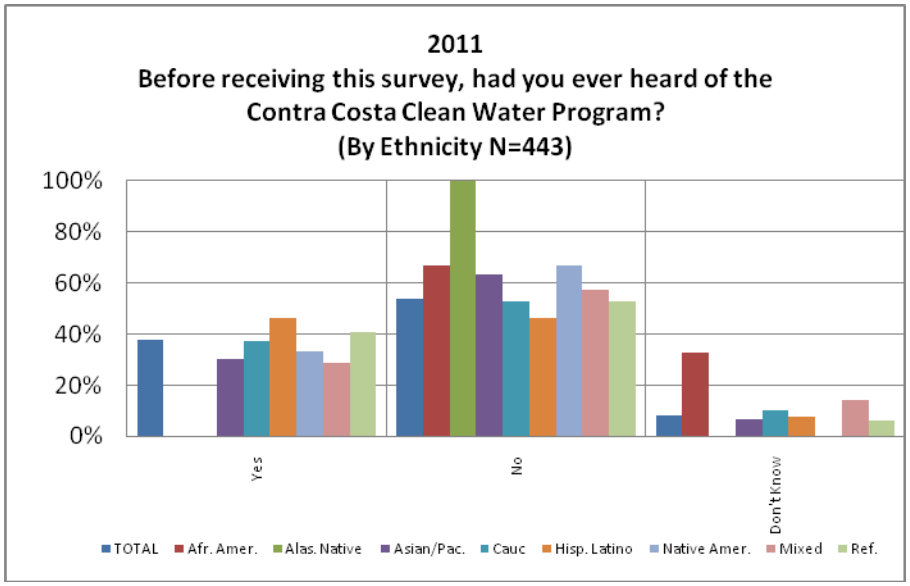
Q.5 Before receiving this survey, had you ever heard of the Contra Costa Clean Water Program?

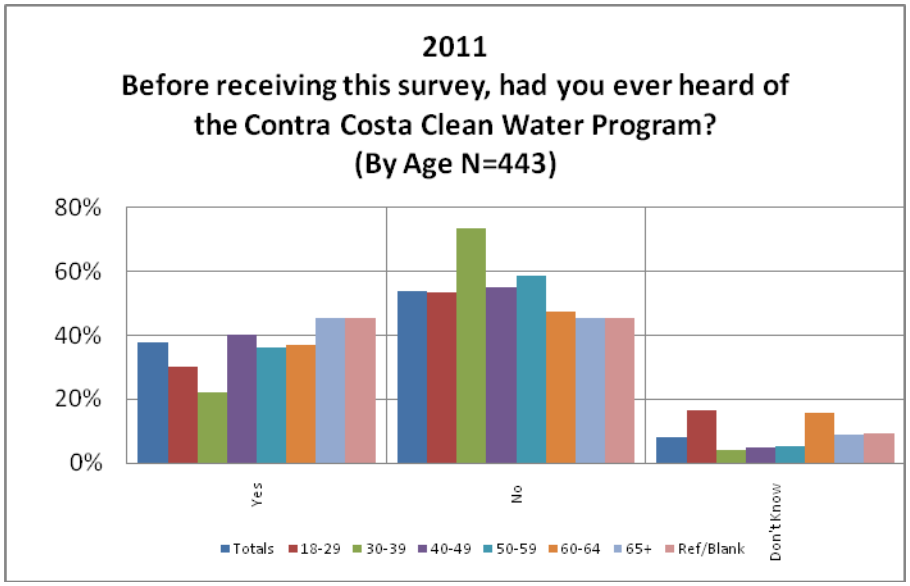
38% of respondents have heard of CCCWP compared to **31%** in both 2010 and 2009; an increase of **8%**. The majority of respondents, **54%**, have not heard of CCCWP before, which is less than the **62%** who had not heard of CCCWP in both 2009 and 2010. This year ***don't know*** responses increased to **8%** from **7%** in 2010 and **6%** in 2009, which is not a significant amount.

Hispanics are more likely, **46%**, to indicate they have heard of CCCWP than **Caucasians**, **37%**, **Asians**, **30%**, or **African Americans**, **0%.** This is different from 2009 and 2010 when **Hispanics** were less likely to say ***yes*** than the other ethnicities. Also, in 2010 **African Americans** were most likely to say ***yes*** but in 2011, NO **African Americans** say ***yes*** they are aware**.**

Residents of the **North/Central** and **Unincorporated Areas** are most likely to have heard of CCCWP, as are people **over the age of 65**. **18-29** year olds and **60-64** year olds state ***don't know*** more often than respondents in other age groups, and those **30-39** are much more likely to say ***no.***




2011
Before receiving this survey, had you ever heard of the Contra Costa Clean Water Program?
(By Ethnicity N=443)
100%
80%
60%
40%
20%
0%
Yes
No
Don't know
TOTAL
Afr. Amer.
Alas. Native
Asian/Pac.
Cauc
Hisp. Latino
Native Amer.
Mixed
Ref.

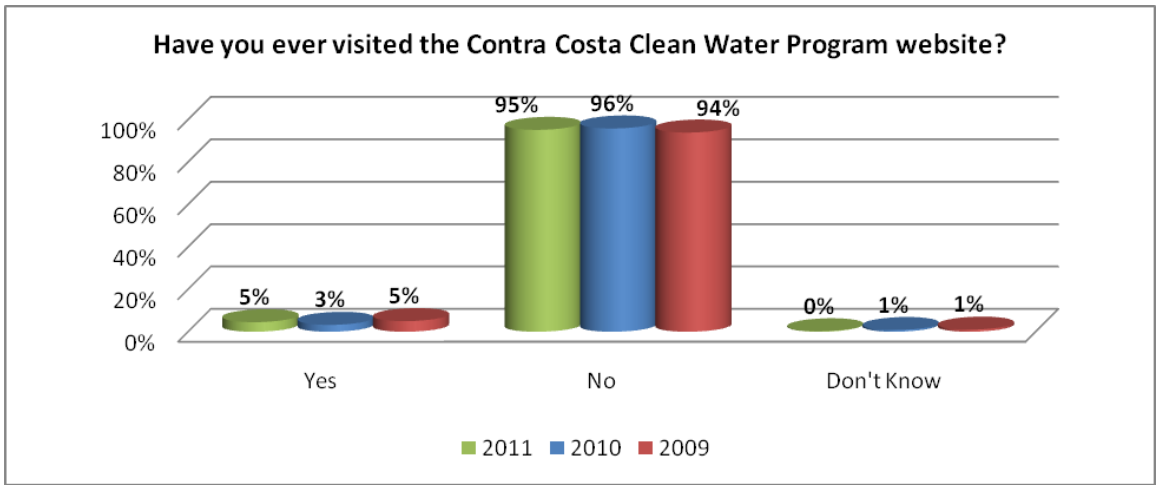

2011
Before receiving this survey, had you ever heard of the Contra Costa Clean Water Program?
(By Age N=443)
80%
60%
40%
20%
0%
Yes
No
Don't know
Totals
18-29
30-39
40-49
50-59
60-64
65+
Ref/Blank

Q.6 Have you ever visited the website CCCleanwater.org?

Only **5%** of respondents indicate they had ever visited the website.

Residents in the **East** are more likely to say yes, **8%**, than the other four areas; **Lamorinda/South**, **2%**, **West, 3%**, **North/Central**, **6%**, and **Unincorporated Area**, **4%.**

All 30 respondents aged**18-29** say ***no***.

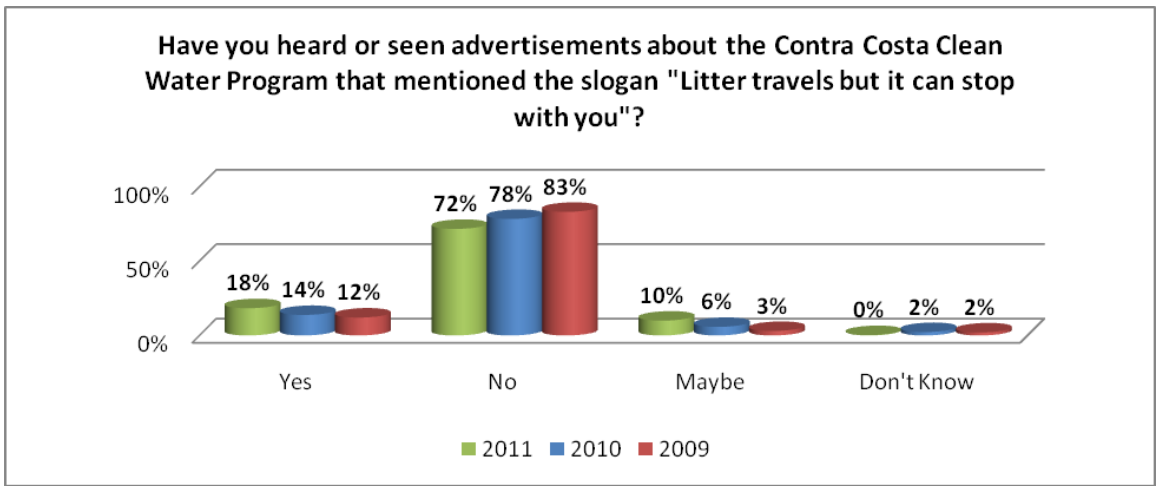


Q.7 Before taking this survey, had you ever heard or seen advertisements from the Contra Costa Clean Water Program that mentioned the slogan "Litter travels but it can stop with you?"

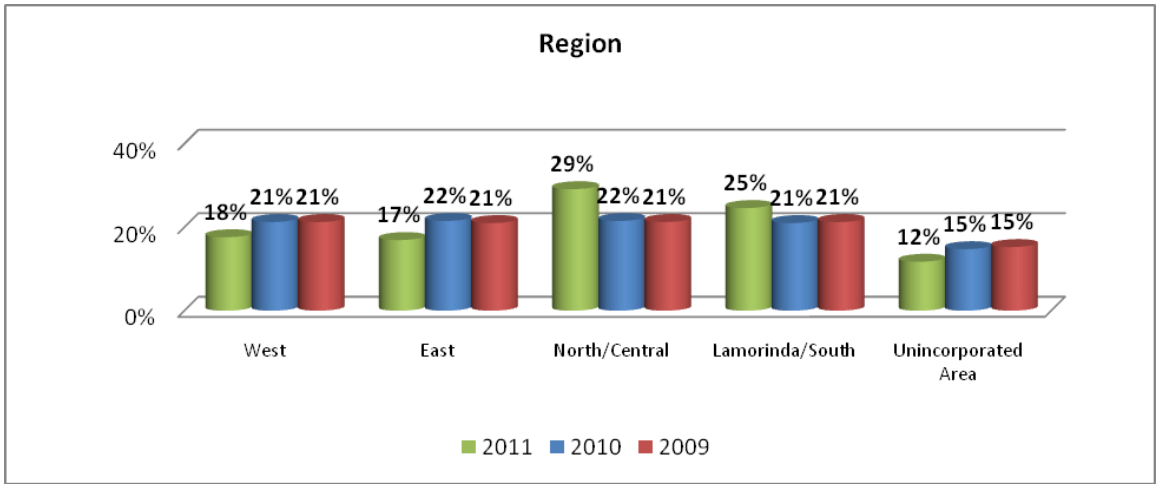
The percentage of respondents who indicate they have heard this slogan increased from **14%** in 2010 to **18%** in 2011. Respondents who say ***no*** decreased from **78%** in 2010 and **83%** in 2009 down to **72%** in 2011.

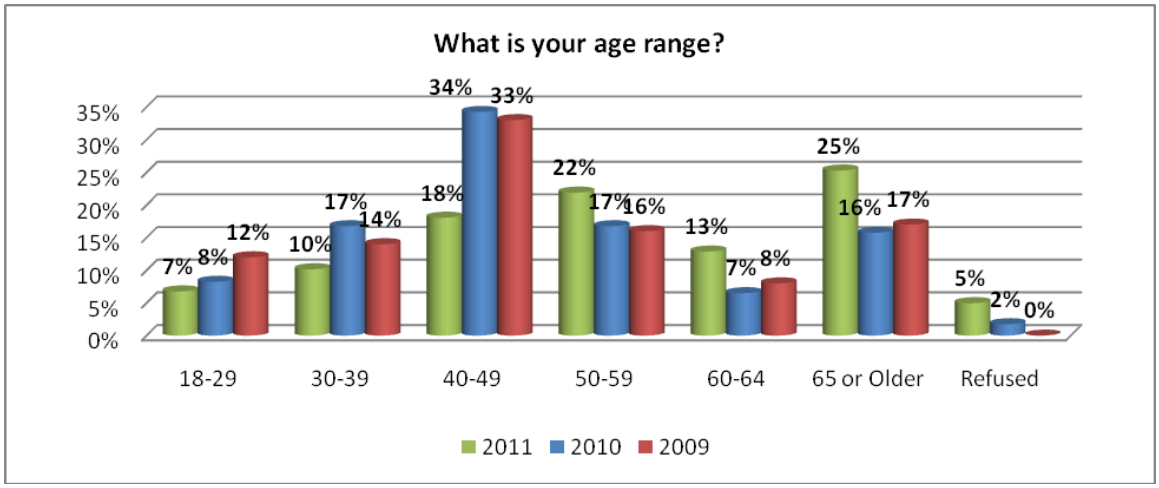
Neither age nor ethnicity appears to make too much of a difference in whether or not respondents have heard or seen the advertisement, but **Caucasians** and **African Americans** are slightly more likely to say they have. In 2010 **Caucasians** and **Hispanics** were more likely than **African American**s and **Asians** to have heard or seen this ad**.** Currently, **Hispanics** are much more likely to say ***don't know*** than the other ethnicities.

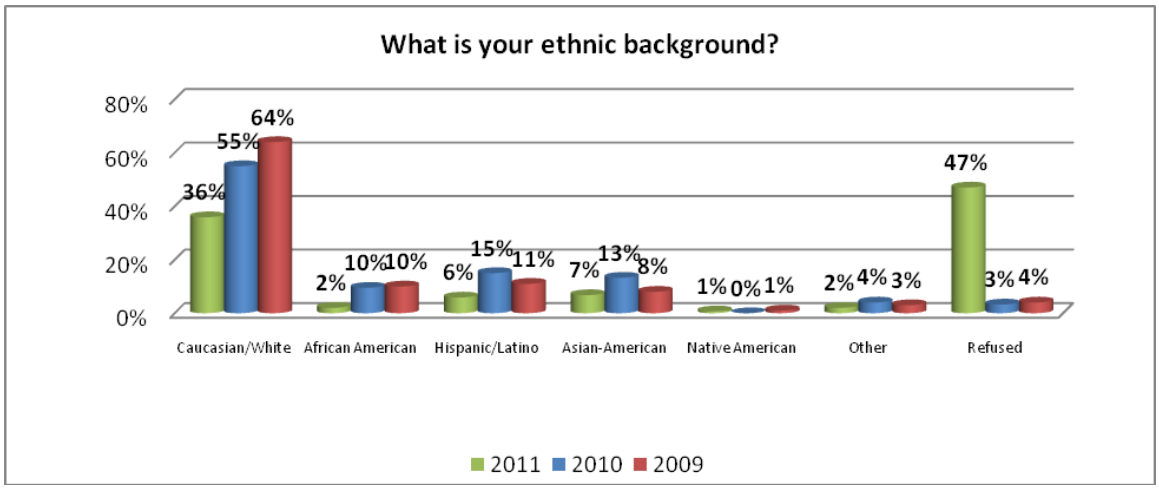
The percentage of respondents who heard or saw the advertisement varies between regions of the county, with **East** highest, **27%,** followed by **North/Central**, **20%**, **Unincorporated Area**, **17%**, **Lamorinda/South, 15%**, and **West, 13%**. This is a change from 2010 when the **North/Central Area** had the highest percentages of respondents who had heard or seen the advertisement.



APPENDIX A – DEMOGRAPHIC CHARTS







APPENDIX B – QUESTIONNAIRE WITH SURVEY TOPLINES

Q1 . Do you think litter impacts/pollutes local water bodies?

	Number	Percentage
YES	419	94.58%
NO	1	0.23%
MAYBE	20	4.51%
DON'T KNOW	3	0.68%

Q2 . How high would you rate your concern about litter polluting our water and water bodies?

	Number	Percentage
VERY	291	65.69%
SOMEWHAT	135	30.47%
LITTLE	16	3.61%
NO AT ALL	0	0.00%
NONE/BLANK	1	0.23%

Q3. In the past year, have you heard or seen any information about how litter travels and builds up and what's being done to protect the County's water bodies from litter?

	Number	Percentage
YES	200	45.15%
NO	173	39.05%
MAYBE	48	10.84%
DON'T KNOW	20	4.51%
NONE/BLANK	2	0.45%

Q4. Where did you hear or see this information?

	Number	Percentage
TELEVISION	186	41.99%
RADIO	50	11.29%
NEWSPAPER	110	24.83%
MAGAZINES	58	13.09%
BUS SIGNS	20	4.51%
BILLBOARDS	36	8.13%
INTERNET	68	15.35%
SCHOOL PROGRAMS	21	4.74%
STENCILED STORM DRAINS	112	25.28%
FRIENDS/RELATIVES/NEIGHBORS	41	9.26%
GOVERNMENT AGENCIES	28	6.32%
OTHER	27	6.09%
NONE/BLANK	158	35.67%
DON'T KNOW/DON'T REMEMBER	2	0.45%

Q5. Before receiving this survey, had you ever heard of the Contra Costa Clean Water Program?

	Number	Percentage
YES	168	37.92%
NO	238	53.72%
DON'T KNOW	36	8.13%
NONE/BLANK	1	0.23%

Q6. Have you ever visited the website CCCleanwater.org?

	Number	Percentage
YES	20	4.51%
NO	422	95.26%
DON'T KNOW	1	0.23%

Q7. Before taking this survey, had you ever heard or seen advertisements about the Contra Costa Clean Water Program that mentioned the slogan "Litter travels but it can stop with you"?

	Number	Percentage
YES	81	18.28%
NO	317	71.56%
DON'T KNOW	44	9.93%
NONE/BLANK	1	0.23%

Q8. Which $5 gift card do you prefer?

	Number	Percentage
PEET'S COFFEE	121	27.31%
SAFEWAY	230	51.92%
JAMBA JUICE	82	18.51%
NONE/BLANK	10	2.26%

D1 . Region

	Number	Percentage
EAST	75	16.93%
LAMORINDA/SOUTH	109	24.60%
WEST	78	17.61%
NORTH/CENTRAL	129	29.12%
UNINCORPORATED AREA	52	11.74%

D2. What is your age range?

	Number	Percentage
AGE 18 TO 29	30	6.77%
AGE 30 TO 39	45	10.16%
AGE 40 TO 49	80	18.06%
AGE 50 TO 59	97	21.90%
AGE 60 TO 64	57	12.87%
AGE 65 OR OLDER	112	25.28%
REFUSED/BLANK	22	4.97%

D3. What is your ethnic background?

	Number	Percentage
AFRICAN-AMERICAN	9	2.03%
ALASKAN NATIVE	1	0.23%
ASIAN/PACIFIC ISLANDER	30	6.77%
CAUCASIAN	159	35.89%
HISPANIC/LATINO	26	5.87%
NATIVE AMERICAN	3	0.68%
MIXED	7	1.58%
REFUSED/BLANK	208	46.95%

APPENDIX C – VERBATIM RESPONSES (Q4. OTHER)

Open End

Can visually see litter in El Cerrito Creek
Non-profit, Door-Door woman
Card
CCC Newsletter from you
bay friendly classes
EBMUD
earth fairs
work - PGE
newsletter
This postcard
when there was cleanup at the shorelines
Mailings
ASCE Website, Smartbrief
Notices
boy scouts
Flyers
water bill from EBMUD
garden clubs
Mail
Mail
Theatre
Observing - water has a white substance after affect
Common Sense
Signs
pamphlets
Please keep doing what youre doing, this is a huge problem
Mail

Contra Costa Monitoring and Assessment Program

Summary of Benthic Macroinvertebrate Bioassessment Results (2010)

Prepared for:
Contra Costa Clean Water Program
255 Glacier Drive
Martinez, CA 94553

Prepared by:
Armand Ruby Consulting
in association with
Brown and Caldwell

September 9, 2011

Preface and Acknowledgements

Many volunteers have assisted in collecting the bioassessment data described in this report. In 2010, participating groups included:

- Friends of the Alhambra Creek Watershed
- Friends of Marsh Creek
- San Pablo Watershed Neighbors Education and Restoration Society (SPAWNERS)
- Friends of Orinda Creek
- Friends of the Creeks
- Friends of Five Creeks

The Volunteer Creek Monitoring Program is jointly managed by the Contra Costa County Department of Conservation and Development and the Contra Costa Clean Water Program. Program guidance and input have been provided by the Contra Costa Volunteer Monitoring Advisory Committee and by members of the Contra Costa Clean Watershed Program's Monitoring Committee.

This report is based on the "Preliminary Assessment of Aquatic Life Use Condition in Contra Costa Creeks; Summary of Benthic Macroinvertebrate Bioassessment Results (2001-2006)", dated June 22, 2007, prepared for the Contra Costa Clean Water Program by Chris Sommers and others at Eisenberg, Olivieri, and Associates (EOA) of Oakland, CA. Some of the content of that report, including background and information related to the development of the preliminary Contra Costa County Benthic Index of Biotic Integrity (B-IBI), is included herein.

The assessments described and results presented in this report should be considered preliminary and non-regulatory in nature. Results are based on limited data analyses and may be revised in the future as new analytical tools are developed.

Collecting benthic macroinvertebrate samples in Marsh Creek, June, 2010

Title page photo: Volunteer records field notes in Cerrito Creek, June, 2010

Executive Summary

The Contra Costa Monitoring and Assessment Program (CCMAP) has monitored fresh water benthic macroinvertebrate (BMI) communities as the lead indicator of the condition of aquatic life uses in Contra Costa County water bodies since 2001. Volunteer monitors began to assist the Contra Costa Clean Water Program (Program) in conducting bioassessments in 2005, and took over primary responsibility for the collection of bioassessment data in 2007. However, in 2010 the volunteer collection team was led by Scott Cressey, a professional fisheries biologist.

BMIs are composed primarily of insect larvae, mollusks, and worms. They are an essential link in the aquatic food web, providing food for fish and consuming algae and aquatic vegetation. These organisms are also sensitive to disturbances in water and sediment chemistry and physical habitat, both in the stream channel and along the riparian zone. They are considered to be useful as integrative indicators of in-stream biotic health.

During the ten-year period, 2001-2010, CCMAP bioassessment monitoring was performed at 141 sites, representing 20 of the 29 major watersheds in Contra Costa County, with over 400 samples analyzed for benthic macroinvertebrate (BMI) community composition.

In 2010, the Contra Costa Volunteer Creek Monitoring Program conducted bioassessment monitoring at a reduced level compared to prior years, with monitoring performed at 12 creek sampling stations, within 7 watersheds in Contra Costa County. To provide a measurement of Aquatic Life Use condition at these stations, a preliminary Benthic Index of Biotic Integrity (B-IBI) score was calculated for each station. The B-IBI score is based on a set of metrics computed from the raw BMI taxonomic data, according to the approach developed previously for creeks in Contra Costa County. The B-IBI scores were then attributed to aquatic life use condition categories (poor, marginal, fair, good, or very good), based on a standardized grading system that assigns specific ranges of B-IBI scores to the categories.

Results from the 2010 bioassessment monitoring indicate that B-IBI scores from the majority (58%) of creek stations sampled in Contra Costa County fell in the fair category, with the remainder of the 2010 stations scoring in either the good (17%) or marginal (25%) categories. Because of the relatively low number of sites monitored, the 2010 results cannot be reliably extrapolated as being more broadly representative of Contra Costa County watersheds.

New Zealand mudsnails (*Potamopyrgus antipodarum*) were not present in any of the 12 samples collected in 2010.

BMI community composition and the resulting B-IBI scores vary both spatially throughout Contra Costa County (due to differences in geographical factors, including land use, underlying geology, and topography) and temporally (due particularly to annual and seasonal differences in climate and weather, especially hydrological factors). Analysis was performed to assess both temporal and spatial variation in B-IBI scores over the ten-year period of bioassessment monitoring.

Annual variability in average IBI scores is attributable to a number of factors, including antecedent (preceding) rainfall and other climatological conditions, as well as monitoring site selection for that year. Prior analysis of the 2006-09 BMI metrics indicated that annual rainfall amount and antecedent spring rainfall amount may affect average BMI community composition in a given year. Additional, detailed analysis conducted with the ten-year (2001-2010) data set indicated that certain climatological factors (prior 30-day rainfall total, cumulative seasonal

rainfall to date, and prior 30-day average high temperature) did not correlate well with site-and-date-specific B-IBI scores. The effects of these climatological factors on BMI community composition seem to be overwhelmed by the spatial differences among sites at any given time.

Selected geographical factors that may influence benthic community composition at bioassessment monitoring sites throughout Contra Costa County were evaluated using average site B-IBI scores from the ten-year (2001-2010) data set. This analysis confirmed that elevation correlates significantly with mean site B-IBI score, with higher average B-IBI scores generally occurring at higher elevations. This may reflect prevailing land use, as the degree of urbanization tends to decrease with increasing elevation in Contra Costa County. The various effects of urbanization (changes in hydrology, riparian vegetation, creek substrate, and water quality) may be reflected therefore in the correlation of B-IBI scores with elevation.

A group of volunteers after a sunny day in Rodeo Creek (Spring, 2009)

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1.0 INTRODUCTION

Bioassessment monitoring has been performed in Contra Costa County creeks under the Contra Costa Monitoring and Assessment Program (CCMAP) since 2001. CCMAP is the principal monitoring vehicle for the Contra Costa Clean Water Program (CCCWP)[1], serving to fulfill monitoring requirements in the Joint Municipal NPDES Permits (Permits) issued by the San Francisco Bay and Central Valley Regional Water Quality Control Boards (Water Boards). Beginning in 2007, all bioassessment data were collected through the efforts of the Contra Costa Volunteer Creek Monitoring Program. However, in 2010 the volunteer data collection team was led by Scott Cressey, a professional fisheries biologist. This report summarizes the methods and results of bioassessment data collection in 2010 under the CCMAP.

1.1 OVERVIEW OF MONITORING PROGRAM

1.1.1 Contra Costa Monitoring and Assessment Program

The CCMAP was created to assess the condition of beneficial uses in individual creeks in Contra Costa County and identify likely stressors. The CCMAP entails a tiered monitoring approach designed to help answer core management questions (shown in Table 1), and to help facilitate the overall goal of protecting beneficial uses in Contra Costa creeks by reducing discharges of pollutants in urban runoff.

Table 1. Five core management questions that guide the implementation of the Contra Costa Monitoring and Assessment Program (CCMAP).
1. What is the condition/status of beneficial uses in Contra Costa receiving waters?
2. What is the extent and magnitude of current or potential receiving water problems?
3. What is the relative stormwater contribution to the receiving water problem(s)?
4. What are the sources to stormwater that contribute to receiving water problem(s)?
5. Are conditions in receiving waters getting better or worse?

The first phase of the CCMAP was initiated in 2001 in the program's pilot watershed, Alhambra Creek. Lessons learned from this pilot effort were used to refine the CCMAP bioassessment monitoring in subsequent years, with monitoring performed in many other watersheds, involving dozens of creeks throughout Contra Costa County.

1.1.2 Contra Costa Volunteer Creek Monitoring Program

In 2003, the CCCWP submitted a grant application to the State Water Resources Control Board in collaboration with the Contra Costa Watershed Forum[2] to create a citizen-based watershed monitoring and assessment program (i.e., Volunteer Creek Monitoring Program). The overall goal of the Volunteer Creek Monitoring Program is to aid in protecting and restoring the San Francisco Estuary and its tributaries in Contra Costa County.

Left: Two Friends of Orinda Creeks volunteers perform a titration for Alkalinity in upper San Pablo Creek

[1]The Contra Costa Clean Water Program is comprised of Contra Costa County, all nineteen of its incorporated cities and the Contra Costa County Flood Control & Water Conservation District (i.e., Co-permittees).

[2] The Contra Costa Watershed Forum is an open committee of private individuals and public agency staff that seeks to identify common principles among parties involved in creek and watershed issues, and promotes actions that promote the transformation of local water resources into healthy, functional, attractive, and safe community assets.

1.0 INTRODUCTION

The Volunteer Creek Monitoring Program is jointly managed by the Contra Costa County Department of Conservation and Development and the Contra Costa Clean Water Program.

1.2 BENTHIC MACROINVERTEBRATES AS INDICATORS OF AQUATIC LIFE USE CONDITION

From among the various options available, the Program selected fresh water benthic macroinvertebrate (BMI) communities as the lead indicator of aquatic life use condition for Contra Costa water bodies.

BMIs are composed primarily of insect larvae (as illustrated in Figure 1), plus mollusks and worms. They are an essential link in the aquatic food web, providing food for fish and consuming algae and aquatic vegetation (Karr and Chu, 1999).

The presence and distribution of BMIs can vary across geographic locations based on elevation, creek gradient, and substrate (Barbour et al., 1999). These organisms are sensitive to disturbances in water and sediment chemistry, and physical habitat, both in the stream channel and along the riparian zone.

Because of their relatively long life cycles (approximately one year) and limited migration, BMIs are particularly susceptible to site-specific stressors (Barbour et al., 1999). They are therefore considered to be useful as integrative indicators of in-stream biotic health.

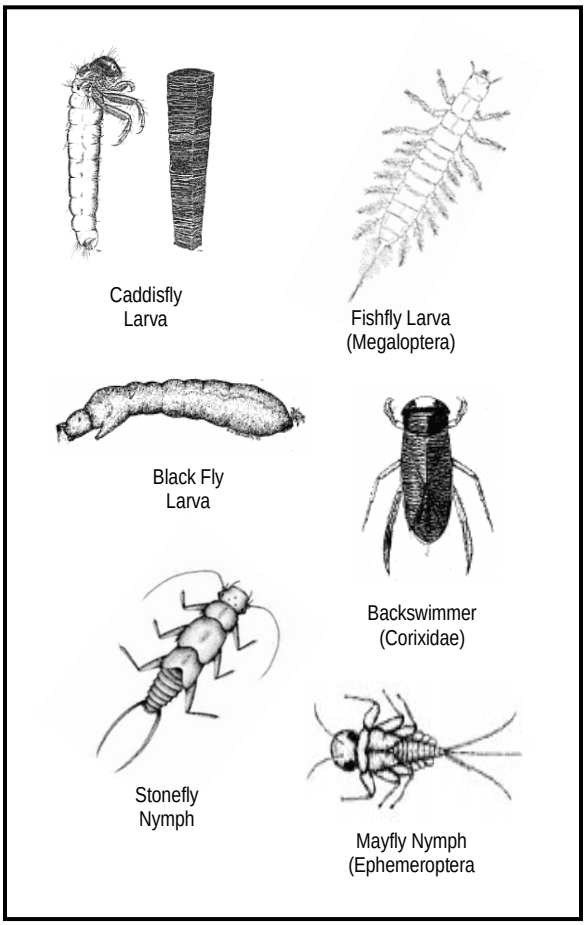


Figure 1. Examples of benthic macroinvertebrates (BMIs) used by the Contra Costa Clean Water Program as indicators of aquatic life use condition.

Mayfly hatch in upper Marsh Creek

2.0 METHODS AND APPROACH

2.1 CONTRA COSTA WATERSHEDS AND SAMPLING STATIONS

Contra Costa County is divided into 29 major watersheds with approximately 1,295 miles of creeks flowing through them (Contra Costa CDD, 2003). Some watersheds have no creeks or only small creeks with ephemeral water flow. Other larger watersheds have been broken into smaller sub-watersheds for planning purposes. Additionally, a few of the watersheds in the southern portion of the County make up the headwaters of major watersheds in Alameda County. Major watersheds, their respective land areas, and miles of creeks (including tributaries) within each watershed are presented in Table 2.

Table 2.Watershed areas and lineal creek distances within the major watersheds of Contra Costa County

Watershed Name	Watershed Area (mi^2)	Creek Length (mi)
1. Alamo Creek/Tassajara Creek (Upper Alameda Creek Watershed)	41.2	101
2. Alhambra Creek	16.7	48.1
3. Baxter Creek	8.64	14.44
4. Cerrito Creek	2.07	5.82
5. Brushy Creek	37.1	45.9
6. Carquinez Area Drainages	10.3	27
7. Cayetano Creek (Upper Alameda Creek Watershed)	6.9	14.1
8. Concord	8.7	0
9. East Antioch Creek	11.4	8.7
10. Garrity Creek	6.2	4.1
11. Grayson Creek (Walnut Creek Watershed)	24	25.4
12. Kellogg Creek	32.6	67.6
13. Kirker Creek	17.4	43.7
14. Las Trampas Creek (Walnut Creek Watershed)	26.9	64.1
15. Marsh Creek	93.8	167.2
16. Mt. Diablo Creek	38.2	80
17. Peyton Slough (Alhambra Creek Watershed)	6.4	8.1
18. Pine Creek/Galindo Creek (Walnut Creek Watershed)	31.5	60
19. Pinole Creek	15.2	46.6
20. Refugio Creek	4.9	9.2
21. Rheem Creek	2.8	3.4
22. Rodeo Creek	10.4	31.6
23. San Leandro Creek/Moraga Creek	20.6	53.8
24. San Pablo Creek	43.6	108.6
25. San Ramon Creek (Walnut Creek Watershed)	54	136.7
26. South San Ramon Creek (Upper Alameda Creek Watershed)	13.1	26.2
27. West Antioch Creek	12.8	26.5
28. Wildcat Creek	11	22.2
29. Willow Creek and Coastal Drainages	23.6	44.8
Total	632.0	1294.9

Note: Watersheds where bioassessments were conducted in 2010 are shaded.

Contra Costa County watersheds are presented graphically in Figure 2. Specific information on the locations of the 2010 CCMAP sampling stations is presented in Table 3. Photographs of the sites monitored in 2010 are included in Appendix A.

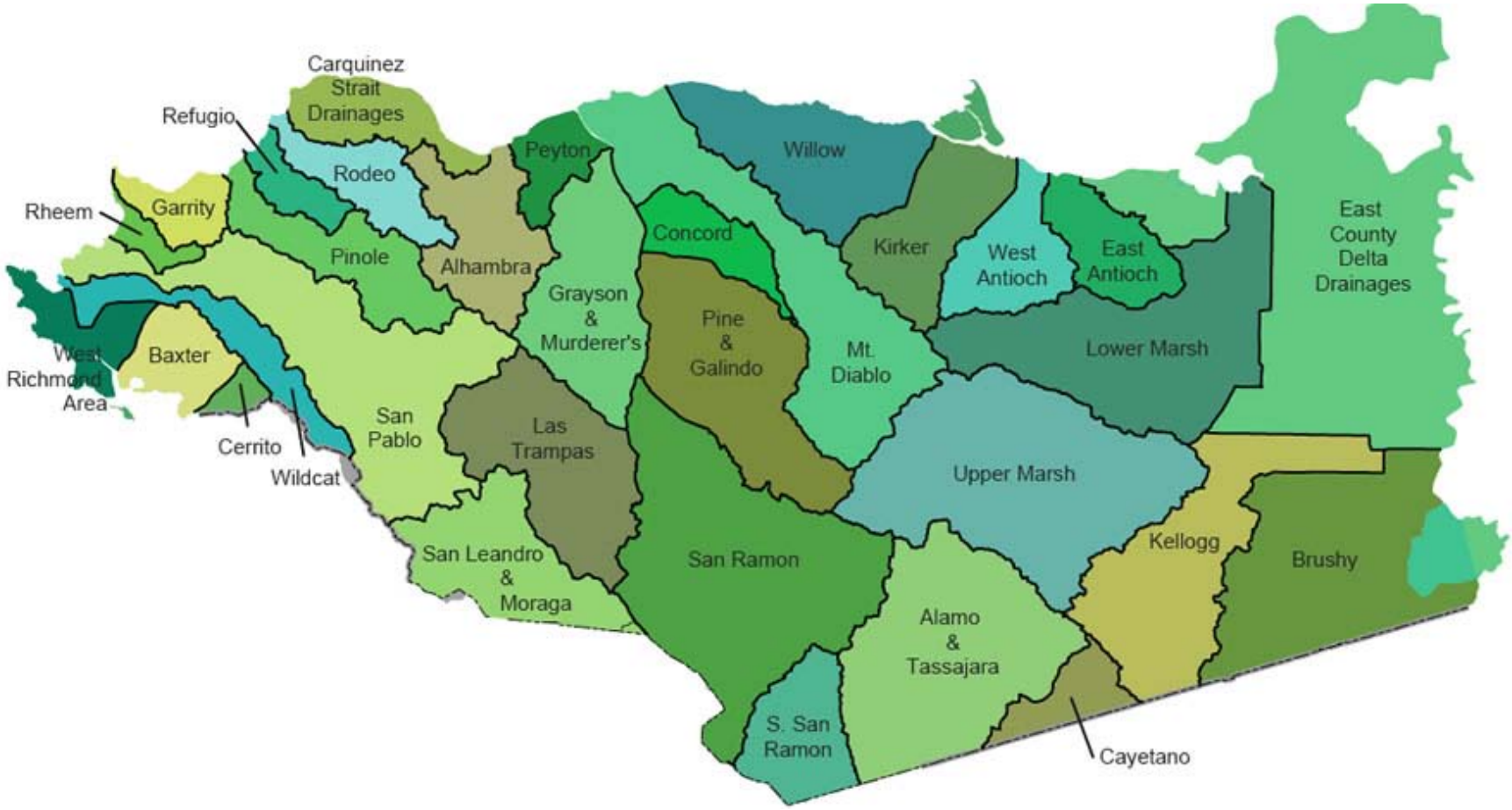


Figure 2. Contra Costa County Watersheds

Table 3. Benthic Macroinvertebrate (BMI) Bioassessment Stations Monitored in 2010.

Code	Waterbody	Location	Latitude	Longitude
Alhambra Creek Watershed				
ALH110	Alhambra Creek	Alhambra Cr. Above Franklin Creek	37.99545	-122.13152
Cerrito Creek Watershed				
CER010	Cerrito Creek	Pacific East Mall	37.89807	-122.306957
CER040	Cerrito Creek	El Cerrito Plaza at culvert	37.89833	-122.29908
Marsh Creek Watershed				
MSH052	Lower Marsh Creek	Between Dainty and Balfour	37.93090	-121.71048
MSH061	Lower Marsh Creek	Creekside Park	37.92159	-121.71306
Refugio Creek Watershed				
RFG040	Refugio Creek	Refugio Creek above County Run Road	38.00501	-122.26335
San Leandro Watershed				
SLE208	Moraga Creek	Miramonte HS	37.84205	-122.14434
San Pablo Creek Watershed				
SPA175	San Pablo Creek	Wagner Ranch Nature Area	37.89966	-122.20531
SPA190	San Pablo Creek	EBMUD Orinda Treatment Plant	37.89163	-122.19960
Las Trampas Creek (Walnut Creek Watershed)				
WAL365	Lafayette Creek	Village Center	37.88780	-122.13505
WAL375	Las Trampas Creek	Leigh Creekside Park	37.89120	-122.11207
WAL410	Las Trampas Creek	Las Trampas Creek above Grizzly Creek	37.86793	-122.09835

Volunteer records field notes in Lafayette Creek, June, 2010

2.2 BIOASSESSMENT METHODS

From 2001 to 2006, the California Stream Bioassessment Procedure (CSBP) for wadeable streams (CDFG 1999 and 2003) was consistently used to collect BMI samples in Contra Costa County. Beginning in 2007, the CSBP was replaced by new SWAMP Bioassessment Procedures, established in February 2007 (Ode, 2007). The principal change in protocols concerns the switch from a targeted-riffle composite (TRC) sampling method to a reach-wide benthos (RWB) method of sampling. The RWB procedure is an objective method of selecting sub-sampling locations because it does not target specific habitat types.

2.2.1 Field Procedures

The 2007 SWAMP protocols were followed by CCMAP citizen monitors during the 2007-2010 sampling. In accord with the SWAMP protocols, the standard sampling layout consists of a 150-m reach (length measured through the thalweg) divided into 11 equidistant transects.

Ambient water chemistry measurements are first taken at the downstream end of the reach. These measurements include temperature, pH, specific conductance, dissolved oxygen and alkalinity. Next, the "bug team" proceeds upstream, collecting BMI samples at every transect, using the method described below.

The bug team is followed by the physical habitat ("PHAB") team, who record observations on physical characteristics of the stream reach, as well as biological habitat characteristics. The dominant land use and land cover in the area surrounding the reach are recorded, along with evidence of recent flooding, fire, or other disturbances that might influence bioassessment samples. See the sample field data sheet (Appendix B) for details on the observations recorded by the PHAB team. See Appendix C for completed field sheets used during actual sampling.

Above: A Friends of the Creek volunteer displays the tools of the trade

Photographs of the reach are taken at downstream, mid-reach, and upstream locations. Reach slope and sinuosity are measured using surveying techniques from the upstream location, looking downstream.

The BMI samples are collected using a 500-µ mesh D-frame kick-net for kick-sampling. Taking a "kick" sample consists of placing the net on the stream bottom; placing any heavy organisms found in the sampling area into the net; rubbing stones within the sampling area in front of the net to remove all attached animals; kicking and dislodging substrate under large, heavy rocks to displace BMIs into the net; and finally, digging fingers 10 cm into the substrate in the sampling area to gather any other organisms. If the current is slow, the sampling procedure for slack water habitats is used, which involves more vigorous kicking during which the net is swept over the disturbed substrate for 30 seconds to collect all organisms. At each transect a one-square-foot area of stream bed is sampled.

The RWB method requires taking 11 sub-samples with the D-net, one at each transect. The bug team alternates the horizontal location of the BMI sample within the transects as they move upstream, starting at 25% of the wetted width from the right bank for the first transect, then at mid-stream for the next, then at 25% of the wetted width from the left bank, and so on. The BMI sub-samples are collected within the kick-net as the team moves upstream to form a spatial composite sample for the entire reach. After the upstream sample has been collected from the 11th transect, the contents of the

net are transferred into a 500-mL or 1000-mL wide-mouth plastic sample jar with 95% ethanol for analysis.

2.2.2 Laboratory Procedures

Bioassessment Services, Inc. (BSI) was contracted to perform the biological identifications and related analysis. BSI hired a subcontractor to first "pick" (or remove) BMIs from the contents in the sample jars. This entailed rinsing the sample bottle contents through a No. 35 standard testing sieve (0.5 mm brass mesh), and transferring the sieved sample into a tray marked with twenty 25 cm^2 grids. Then, all material was removed from one randomly-selected grid at a time and placed into a Petri dish for inspection under a stereomicroscope (at 10x). All macroinvertebrates from the grid were separated from the surrounding detritus and transferred to vials containing 70% ethanol and 2% glycerin. This process was continued until 500 organisms were removed from each station's composite sample. The picked samples were then delivered to trained aquatic entomologists.

The bioassessment entomologist responsible for identifying the organisms from the picked samples and analyzing the results (enumeration and grouping according to taxa, and developing the associated metrics) was Tom King of BSI. Mr. King participates in the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT) organization (formerly the California Bioassessment Laboratories Network) and is approved for BMI sample analysis by the California Department of Fish and Game (CFDG) Aquatic Bioassessment Laboratory. BMIs were identified to standard taxonomic levels as established by the CDFG (typically genus for insects and order or class for non-insects), using standard taxonomic references.

Bioassessment results (i.e., taxa lists) were provided to County staff in Excel spreadsheets, and the five relevant metrics were then used to compute the IBI scores for each site, according to the preliminary Contra Costa IBI methodology described above.

2.3 PHYSICAL HABITAT ASSESSMENT METHODS

As part of the revised SWAMP bioassessment protocols published in February 2007, physical habitat assessment methods and field forms were provided by SWAMP's Clean Water Team. The format of the field forms was modified slightly by the Clean Water Team in response to requests by the Volunteer Creek Monitoring Program, and the resulting modified SWAMP forms were used by volunteer personnel in the field. The field form is shown in Appendix B.

As indicated in the SWAMP protocols, measurements of in-stream and riparian habitat and ambient water chemistry always accompany bioassessment samples. Physical habitat measurements were made at the transects established during BMI collection. For each transect the wetted stream width, bankfull width, and height were measured, along with various other parameters.

The various items are compiled and given a reach-wide score, with a higher score indicating a more robust and healthy habitat. A summary of physical habitat scores for all bioassessment stations monitored in the current year is provided in Appendix D.

Left: Volunteers calculate stream discharge in Wilkie Creek (Spring, 2009)

2.4 DATA QUALITY ASSESSMENT

The CCMAP and Volunteer Creek Monitoring Program comply with quality control and assurance procedures described in the Quality Assurance Project Plan (QAPP) developed for the Volunteer Creek Monitoring Program (updated 4/7/2009), which in turn is comparable with data quality assessment procedures implemented by the State of California's Surface Water Ambient Monitoring Program (SWAMP). The QAPP identifies data quality acceptance criteria (i.e., data quality objectives) related to the accuracy, precision, completeness, comparability, sensitivity, and representativeness of data collected. Based on these criteria, duplicate samples are collected and analyzed annually for 10% of stations sampled, and the results are assessed for precision. Precision is assessed by calculating the percent of species similarity between original and duplicate samples. Additionally, accuracy is measured by annually re-analyzing 10-20% of samples by an independent taxonomist. The independent taxonomy QA/QC analysis was conducted by the Aquatic Bioassessment Laboratory at California State University, Chico. Results of the 2009 data quality assessments are summarized in Appendix E.

2.5 ANALYSIS AND INTERPRETATION METHODS

2.5.1 Benthic Macroinvertebrate Metrics

According to Barbour *et al*. (1999), a metric is "a measure of the biota that changes in a predictable way with increased human influence." For the CCMAP, a variety of metrics are calculated for each sample to allow interpretation of BMI taxonomic data received from the entomologist. Metrics can be categorized into five main types:

- Richness Measures (total number of distinct taxa);
- Composition Measures (distribution of individuals among taxonomic groups, which includes measures of diversity);
- Tolerance/Intolerance Measures (reflects the relative sensitivity of the assemblage to disturbance);
- Functional Feeding Groups (shows the balance of feeding strategies in the aquatic assemblage);
- Abundance (estimates total number of organisms in sample based on a nine sq. ft. sampling area).

2.5.2 Benthic Indices of Biotic Integrity

An Index of Biotic Integrity (IBI) is an index that reduces complex information about biological community structure into a simple numerical value based on measures of taxonomic richness (number of taxa); taxonomic composition (e.g., insects vs. non-insects); taxonomic diversity; types of functional feeding groups (e.g., shredders, scrapers, or predators); habits (e.g., burrowing, clinging, or climbing taxa); and tolerance to stressors. Typically, separate metrics are used from each of these categories to develop a multi-metric index of biological integrity (IBI) for a particular region of interest (e.g., Western U.S., Northern California, or Contra Costa County) to assess the biological condition in creeks.

San Francisco Bay Area B-IBI

To better understand the biological integrity of Bay Area creeks, the Bay Area Macroinvertebrate Bioassessment Information (BAMBI) network[3] has begun to develop a provisional benthic IBI (B-IBI) for San Francisco Bay Area Creeks. The Bay Area B-IBI is being developed using data collected from Contra Costa, Alameda, Santa Clara, San Mateo, Napa, Marin, Sonoma and Solano counties, and will fill a geographical data gap created by the Northern and Southern California B-IBIs. The Bay Area B-IBI was originally scheduled to be completed in 2007; the actual completion date is unknown.

[3] BAMBI is a network of scientists, watershed managers, regulators and community members interested in using biological communities as indicators of stream health in the San Francisco Bay Area.

Contra Costa B-IBI

As a preliminary step in developing the B-IBI for San Francisco Bay Area creeks, data from Contra Costa County were used to test metrics used in Southern and/or Northern California B-IBIs (Ode et al., 2005; Rhen and Ode, 2006) for applicability in the Bay Area. This involved comparisons of benthic conditions from "reference" sites vs. non-reference sites.

Reference Station Selection

Reference stations are sections of creeks that have "reference conditions" representing the desired state of stream health for a region of interest. There are many definitions of the term "reference condition" ranging from the pristine, undisturbed state of a stream, to merely the "best available" or "best attainable" conditions in a region. Because practical considerations limit our ability to find minimally disturbed sites, most reference condition approaches seek to identify a compromise, the "least disturbed condition" in region. In regions like the San Francisco Bay Area, it is necessary to select sites that represent the "best attainable" condition given application of best management practices in a heavily human-impacted ecosystem. Once candidate reference stations have been identified, these are used to characterize the range of biotic conditions expected for minimally disturbed sites. Deviation from this range can then be used as an indication that non-reference stations may be impacted.

The bioassessment programs in Contra Costa County have attempted to include information about minimally impacted conditions at selected "reference" stations to supplement data collected at BMI monitoring sites. Using "best professional judgment" and qualitative physical habitat scores, a pool of potential reference stations (~30) was initially selected. From those, the 11 stations listed in Table 4 were selected to represent reference conditions in Contra Costa County.

Table 4.Reference stations selected during the development of the preliminary B-IBI for Contra Costa County.

Water Body	Station Code	Location
Upper Marsh	543MSH170	Upper Marsh Creek 4.8 miles above Curry Creek
Upper Marsh	543MSH160	Upper Marsh Creek 3.8 miles above Curry Creek
Upper Marsh	543MSH150	Curry Creek between 1st and 3rd bridges near mouth
Upper Marsh	543MSH140	Marsh Cr. below Curry Cr. at Tumbleweed Ct.
Upper Marsh	543MSH130	Marsh Creek at Detention Center
Kellogg	543KEL040	Kellogg Creek at 0.3 miles above Mallory Creek
Mallory	543KEL030	Mallory Creek 0.25 mile above road, upper site
Mallory	543KEL020	Mallory Creek 900 feet above road, lower site
Kellogg	543KEL010	Kellogg Creek just above Los Vaqueros Reservoir
Las Trampas	207WAL420	Las Trampas Creek below Valley Hill Road
Mitchell	207MTD100	Mitchell Creek at Oak Street

Variation in BMI assemblages due to natural factors (such as elevation) can affect the development and interpretation of IBI scores. These factors were not fully evaluated during the development of the Preliminary B-IBI for Contra Costa County. The process of identifying these reference conditions is currently underway in the development of the B-IBI for San Francisco Bay Area creeks.

Metrics Screening and Selection for Use in IBI

Appropriate metrics for the derivation of the preliminary Contra Costa B-IBI were selected to match the 11 metrics used in the development of B-IBIs for Northern and Southern California, which were derived following United States Environmental Protection Agency recommendations (Barbour *et al*. 1999, Hughes *et al*.1998, McCormick *et al*. 2001). Each of the 11 metrics was tested for its power to discriminate between reference and test stations. Based on the results of this screening process, the following five "core" metrics used in the Northern and/or Southern California B-IBIs were also selected for inclusion in the preliminary Contra Costa B-IBI:

1. EPT Richness (Cumulative # Ephemeroptera + Plecoptera + Trichoptera taxa)
2. Percent Noninsect Taxa
3. Diptera Richness (# taxa)
4. Predator Richness (# taxa)
5. Percent Collector Individuals

Defining Scoring Ranges of Core Metrics

Metric scoring ranges were defined using techniques described in Hughes *et al*. (1998) and McCormick *et al*. (2001). Statistical properties of the distribution of metric scores for both reference and test stations were used to define cutoffs for each of the 5 metrics selected using the following criteria: 1) any station with a metric value of less than the 5th percentile of the test stations was assigned a "0" score, and 2) any site with a metric value of greater than the 25th percentile of the reference stations was assigned a "10" score. The range between these values was divided into 9 equal portions and assigned values between 1 and 9. Table 5 presents the scoring ranges for the five metrics included in the preliminary Contra Costa County B-IBI.

Table 5. Scoring ranges for the five metrics included in the preliminary Contra Costa County Benthic-IBI and scoring categories that define biotic condition.

IBI Score	Cumulative EPT Taxa	% Non-Insecta Taxa	Diptera Taxa	Predator Taxa	% Collectors
10	>9	0-17	> 5	> 9	0-78
9	9	18-22		9	79-80
8	8	23-28	5	8	81-82
7	7	29-33		7	83-85
6	6	34-39	4	6	86-87
5	5	40-44		5	88-89
4	4	45-50	3	4	90-91
3	3	51-55		3	92-94
2	2	56-61	2	2	95-96
1	1	62-66		1	97-99
0	0	>66	< 2	0	100

B-IBI Scoring Categories				
Very Good	Good	Fair	Marginal	Poor
50-43	42-35	34-23	22-11	10-0

Calculation of the B-IBI

For each monitoring event, the five selected core metrics are assigned scores for each site, using the scoring categories defined in Table 5, and the B-IBI score for each site is calculated by simply summing the component metric scores. The resulting B-IBI scores are then divided into scoring categories that define thresholds of biotic condition as shown at the bottom of Table 5. For the preliminary Contra Costa B-IBI the scoring categories were established by first using the 25th percentile of reference stations to set the boundary between the "Good" and "Fair" scoring ranges. Then the top end of the scale was divided into two equal sections ("Good" and "Very Good") and the bottom end of the scale was divided into three equal sections ("Fair", "Marginal" and "Poor").

3.0 RESULTS

3.1 COUNTY-WIDE OVERVIEW – BMI RESULTS

During 2010, over 5,000 individual macroinvertebrate organisms were taxonomically identified from the 12 sampling stations in the 7 Contra Costa County watersheds monitored. These organisms comprised 58 distinct BMI taxa. These numbers are all substantially lower than in prior years, when many more sites were monitored. Because the 12 sites monitored in 2010 also were selected on a non-random basis, the 2010 data are not considered to be representative of benthic faunal conditions throughout Contra Costa County generally.

Table 6 provides an overview of the distribution of the 2010 BMI identification results by major taxonomic grouping. A complete list of taxa identified in Contra Costa County samples in 2010 is included in Appendix F.

Table 6. Percentages of all organisms identified within various BMI groups (2010).

GROUPS OF BENTHIC MACROINVERTEBRATES IDENTIFIED	% OF ALL ORGANISMS
Aquatic Insects/Spiders/Crustaceans (Arthropoda)	**73.09%**
Aquatic Insects:	
True Flies (Diptera)	44.28%
Mayflies (Ephemeroptera)	9.81%
Stoneflies (Plecoptera)	2.00%
Caddisflies (Trichoptera)	1.23%
Dragonflies and Damselflies (Odonata)	0.78%
Beetles (Coleoptera)	0.13%
Amphipoda	12.81%
Ostracoda	1.25%
Acari	0.47%
Isopoda	0.32%
Segmented Worms (Annelida)	**19.78%**
Hirudinea	1.77%
Polychaeta	0.06%
Oligochaeta	17.95%
Coelenterata	**0.13%**
Snails and Clams (Mollusca)	**5.55%**
Flat Worms (Platyhelminthes)	**1.40%**
Nemertea	**0.06%**

3.1.1 Most Dominant Taxa

For the 12 sites monitored in 2010, 62% of the organisms identified belonged to one of five taxa (Table 7). Oligochaetes (worms) were the most common taxon, while Dipterans (true flies) cumulatively were the most common taxa identified, occupying three of the top five taxonomic frequencies.

The 2010 taxonomic results were less dominated by Dipterans (true flies) than in prior years; from 2008 to 2010 the frequency of Dipteran identifications declined from 57% to 44%. At the same time, the relative occurrence of Oligochaetes (worms) rebounded from relatively low levels in 2008 and 2009, and again, as in 2007, Oligochaetes were the number-one-ranked taxa identified. Chironomids (non-biting midges; a family within the Dipteran order) have remained among the top five taxa for the past several years; however, their abundance is lower in recent years than during the 2001-06 period, when they cumulatively represented 30% of all organisms identified (per EOA, 2007). In 2008 Chironomids

dropped to 10% of organisms identified, and in 2009 and 2010 their abundance was less than 10% of the total. Chironomids are closely related to mosquitoes (Culicidae) and biting midges (Ceratopogonidae), and are usually the most abundant macroinvertebrate group in natural freshwater habitats (Epler, 2001). Oligochaetes are aquatic segmented worms, common in most freshwater habitats. Many aquatic worms can tolerate low dissolved oxygen and may be found in large numbers in organically polluted habitats.

Table 7. Five most frequently identified BMI taxa identified in samples collected in 2010.

TAXON	TAXONOMIC GROUP	TOLERANCE VALUE (0-10)*	% OF ALL ORGANISMS
Oligochaeta	Annelida	5	17.8%
Tanytarsini	Diptera	6	12.7%
Orthocladiinae	Diptera	5	11.6%
Baetis	Ephemeroptera	5	9.5%
Chironomini	Diptera	6	8.5%
		Total	**62%**

*Tolerance values range from 0-10, 0 = the least tolerant and 10 = the most tolerant to stress (e.g., pollution).

3.1.2 Functional Feed Groups (FFGs)

BMI taxa are classified into functional feeding groups (FFGs) based on their feeding mechanisms. FFGs include collector-gatherers, collector-filterers, scrapers, shredders, and predators. The relative distribution of these FFGs within creeks can provide an indication of ecosystem health. Without a relatively diverse variety of food types (e.g., fine and coarse particulate organic material, algae and other BMIs), certain FFGs may predominate, indicating an imbalance in BMI community structure, and reflecting stressed conditions.

Collector-filterers and collector-gatherers depend upon fine particulate organic matter (FPOM) for their primary food resource. Filterers obtain fine suspended material from the water column, while collector-gatherers, also called deposit-feeders, generally gather fine materials, including plant, animal, and fungal detritus, from the surfaces of substrates. Scrapers (grazers) depend upon attached periphyton (i.e., algae and associated flora and fauna) that develops on submerged substrates for their primary food resource. Shredders depend upon coarse particulate organic matter (CPOM) for their primary food resource. CPOM is any material greater than about 1 mm in diameter; examples include twigs, leaves, fruits and flowers of terrestrial or aquatic vegetation. Lastly, predators attack living prey organisms; often other BMIs.

Generalists, such as collector-gatherers and collector-filterers, have a broader range of acceptable food materials than specialists (Cummins and Klug 1979), and thus are more tolerant to stressors that might alter availability of certain food types. Specialized feeders, such as scrapers, shredders and predators, are typically considered to be more sensitive types of BMIs and are generally well represented in healthy streams.

While several specialized FFGs are represented in the Contra Costa County BMI data, the 2010 BMI samples are dominated by generalist FFGs (see 2010 distribution, Figure 3), with 83% of identified organisms in the collector-gatherer and collector-filterer categories in 2010. While the 2010 results are based on samples from just 12 sites, the 2010 pattern is similar to that observed in recent years.

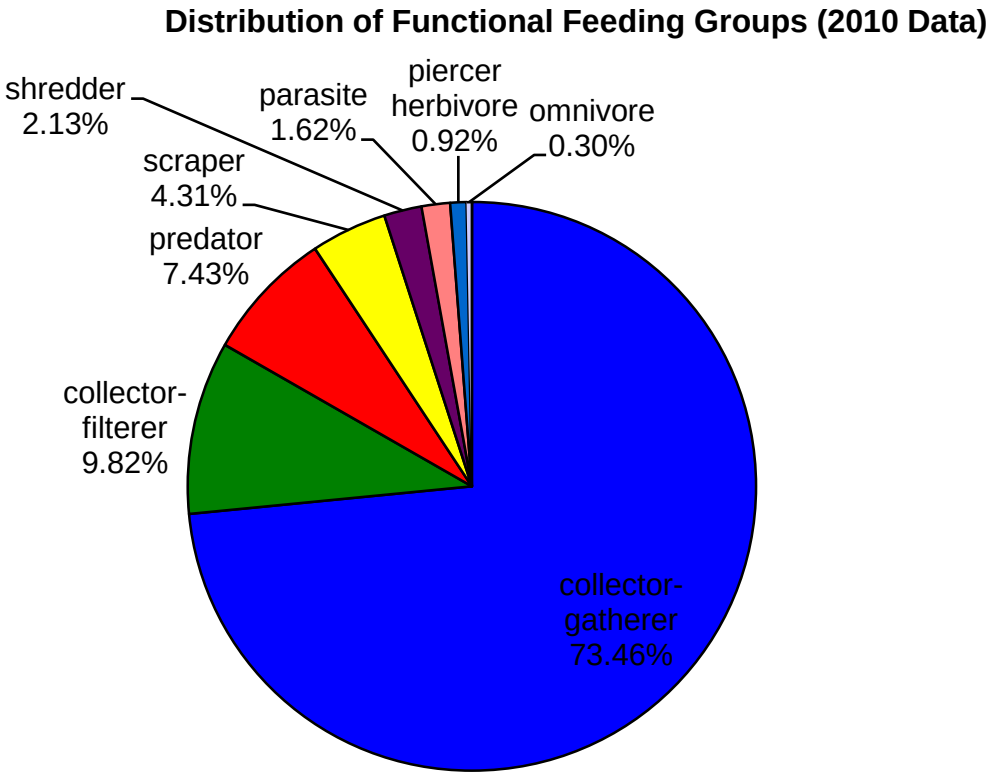


Figure 3. Percentages of organisms identified in functional feeding groups in 2010.

3.2 CURRENT CONDITION OF BENTHIC AQUATIC LIFE IN CONTRA COSTA COUNTY CREEKS

Using the preliminary B-IBI scoring ranges developed for Contra Costa County, B-IBI scores were calculated for each creek sampling station and event. Because of the small number of sites monitored in 2010, the B-IBI scores presented in this report are not considered to be representative of the full range of benthic faunal conditions in Contra Costa County.

Based on data from the 12 bioassessment stations sampled in 2010, the results indicate that the majority of creek stations sampled in Contra Costa County scored in the fair category, with the remainder of sites scoring in the good and marginal categories (Figure 4). Due to the relatively small number of stations sampled, the range of results is narrower in 2010 than in prior years; for this reason also the 2010 data are assumed to be less representative of county-wide conditions than data from prior years.

To assess the general condition of aquatic life uses on a watershed scale, average B-IBI scores were calculated for the 12 Contra Costa watersheds monitored during 2010, using the average score of stations monitored within the watershed boundaries (Figure 5). The individual metrics and scores used to calculate the B-IBI scores are presented in Appendix G.

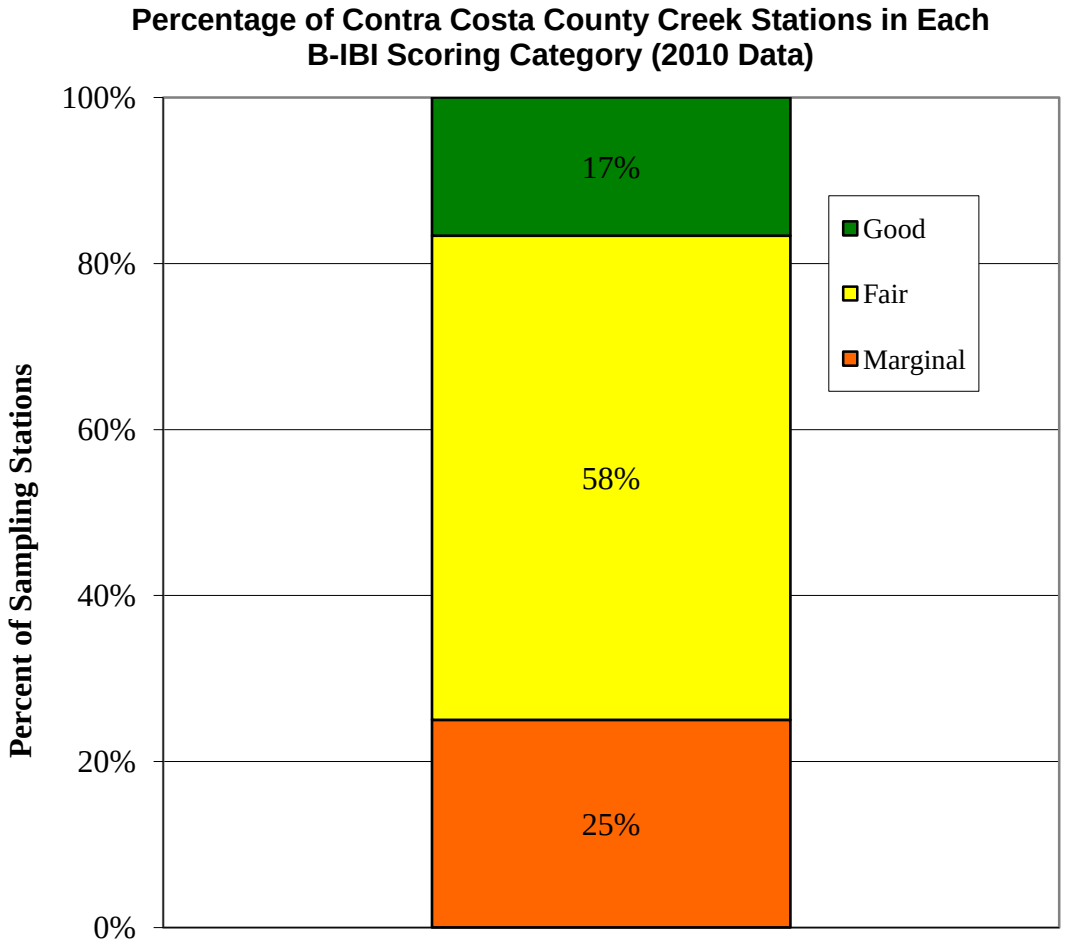


Figure 4. Percentage of Contra Costa County creek stations in each B-IBI scoring category, based on 2010 data.

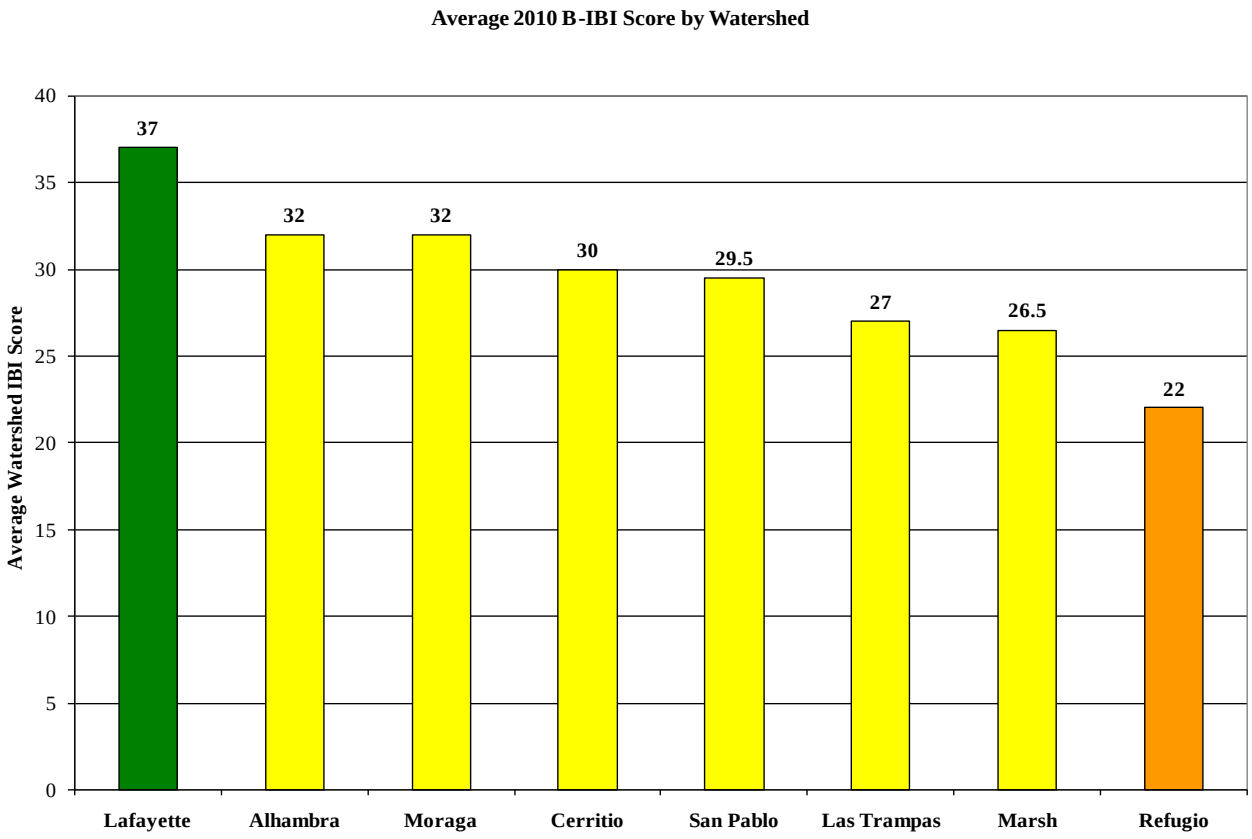


Figure 5. Average 2010 B-IBI Score by watershed

Notes: the Las Trampas sites are located within the Walnut Creek watershed, and Lafayette Creek is a tributary to Las Trampas Creek. Moraga Creek is located within the San Leandro Creek watershed.

3.3 POTENTIAL FACTORS AFFECTING BMI COMMUNITY COMPOSITION

BMI communities can be affected by a variety of natural factors (e.g., elevation, hydrology, in-stream and riparian physical habitat quality, food availability, and predation) and anthropogenic factors (e.g., urbanization, impoundments, water quality effects, and introduced invasive species). BMI community composition and the resulting B-IBI scores vary both spatially throughout Contra Costa County (due to differences in geography, including land use, underlying geology, and topography) and temporally (due particularly to annual and seasonal differences in climate and weather). Some analysis was performed to assess both spatial and temporal variation in B-IBI scores over the ten-year period of bioassessment monitoring.

3.3.1 Temporal Variation

In prior years, the CCMAP attempted to standardize to some degree the monitoring approach, to minimize the variability due to the annual selection of monitoring locations. This was done by collecting samples from a relatively large number of sites each year, selecting sites from a variety of creeks and watersheds throughout the County, selecting specific sites on a recurring basis to obtain results for consecutive years, and by consistently collecting samples during the same time of year in

each annual cycle. Nonetheless, several unavoidable factors contribute to year-to-year variations in average B-IBI scores, as discussed below.

In Contra Costa County, bioassessments are conducted once annually during the late spring or early summer. Sampling occurs during this "index period" because benthic communities are typically at their most diverse and are highly abundant prior to emergence (i.e., before adult flight). Because samples are collected only during this one period annually, intra-annual (within year) variation is not addressed. However, the considerable degree of inter-annual (between years) variability confounds attempts to assess changes in the condition of aquatic life use indicators over time.

3.3.1.1 Change in Sample Collection Approach

In February 2007, the Surface Water Ambient Monitoring Program issued new protocols for benthic bioassessment for use throughout the state of California. As described in Section 2.2.1, the new protocols required use of a reach-wide benthos (RWB) technique, rather than the targeted-riffle composite (TRC) method used previously. This change was implemented by the CCMAP in 2007. The 2007 BMI report (ARC, 2008) included an analysis as to whether the change in BMI data collection protocols may have had an effect on the resulting B-IBI scores.

The RWB technique might be expected to result in more samples from less-rich habitat, potentially leading to correspondingly lower B-IBI scores, because the riffle sites targeted in the TRC technique are considered to generally be the most desirable habitat type for benthic organisms. However, comparisons of B-IBI scores for sites that were sampled both in 2006 and 2007 supported the opposite conclusion (see Appendix H, 2007 data report (ARC, 2008)). Of 47 data pairs available for comparison, the 2007 B-IBI scores were *higher* than the 2006 scores in most cases. Average B-IBI scores for the paired sites were 19.6 in 2006 and 27.0 in 2007; this difference was statistically significant. Similar trends were observed in comparisons of the average annual scores for the five individual metrics that comprise the IBI composite score, for sites monitored in both 2006 and 2007.

Overall, the test results indicated that benthic populations were on average healthier in 2007 compared to 2006, for those sites tested in both years, even though the RWB sampling approach was implemented in 2007. Other factors were apparently more influential in the year-to-year differences in IBI scores; the possible influence of hydrologic factors is discussed below.

3.3.1.2 Site Selection

Because all BMI monitoring sites cannot be monitored every year, the mix of sites selected for monitoring in any given year can affect the average annual BMI score for each monitored watershed and for the county-wide program as a whole. While an effort is made to select a representative mix of sites each year, this necessary selection process is a likely factor in average annual IBI score variation.

3.3.1.3 Climate and Weather

Differences in annual climate, particularly hydrological factors such as antecedent rainfall (rainfall that occurs in the period prior to sampling), may influence B-IBI statistics.

As shown in Table 8, both annual and spring rainfall amounts were substantially higher in 2005-06 than during any of the three subsequent years. The critical spring period (March-May) of 2006 received much higher rainfall than the spring periods of 2007 and 2008. The flushing effect of the higher 2006 spring rainfall and resulting higher creek flows may have prevented establishment of diverse and populous benthic assemblages prior to the 2006 sampling period. The 2008-09 rainfall year was similar in total precipitation to the previous (2007-08) hydrologic year, but rainfall was substantially higher during the 2009 spring period than during the 2008 spring, when very little rainfall occurred.

Table 8. Comparison of Incident Rainfall, 2005 - 2009				
Month	**2005-06**	**2006-07**	**2007-08**	**2008-09**
July	0	0	0	0
Aug	0	0	0	0
Sept	0	0	0.1	0
Oct	0.09	0.1	1.62	0.06
Nov	1.2	1.45	0.67	2.69
Dec	11.79	2.39	2.96	2.73
Jan	2.2	0.43	7.26	1.14
Feb	1.8	3.58	2.24	6.84
Mar	6.18	0.15	0.15	2.23
Apr	3.81	0.76	0	1.22
May	0.65	0.3	0	0.61
June	0	0	0	0
Year:	**27.72**	**9.16**	**15.00**	**17.52**
Spring:	**10.64**	**1.21**	**0.15**	**4.06**

Rainfall in inches at Concord Wastewater Plant
Spring period = March-May

For two three-year periods of BMI sampling (2006-2008 and 2007-09), average B-IBI scores and other metrics were compared for sites that were sampled consecutively in all three years (see ARC, 2009, 2010). For the 2006-08 period, 24 sites were sampled consecutively in all three years, and in 2007-09, 15 sites were sampled consecutively in all three years. In the comparison of 2006 to 2007 results, the very wet spring in 2006 appears correlated with much lower IBI scores in comparison with the IBI scores obtained during the more normal water year in 2007. Overall, 2008 results tended to be intermediate between the 2006 and 2007 results, though the 2008 average IBI scores from these sites were much closer to the 2007 results than the 2006 results. This finding corresponds with the similarity in annual and spring rainfall amounts between 2007 and 2008, and the dissimilarity between those years and 2006. By contrast, the 2009 results tended to be similar to the 2007 results, and average IBI scores in both 2009 and 2007 were higher than the 2008 results. The very dry spring experienced in 2008 may have had a detrimental effect on overall (average) results.

This analysis indicates that a very wet water year and in particular a very wet spring may have a dramatically negative effect on BMI community composition, while a very dry spring may also have a negative effect.

To further test potential effects of climate on B-IBI scores, B-IBI scores accumulated during the ten-year period of bioassessment monitoring (2001-2010) in Contra Costa County were compared to three relevant climatological metrics:

- Rainfall amount in the 30 days prior to BMI sampling
- Season-to-date rainfall amount prior to BMI sampling
- Mean daily high temperature for 30 days prior to BMI sampling

As shown in Figures 6, 7, and 8, none of these factors are strongly correlated with B-IBI scores. In all three cases the site-to-site variability is much more prominent than any effect of the climatological feature evaluated.

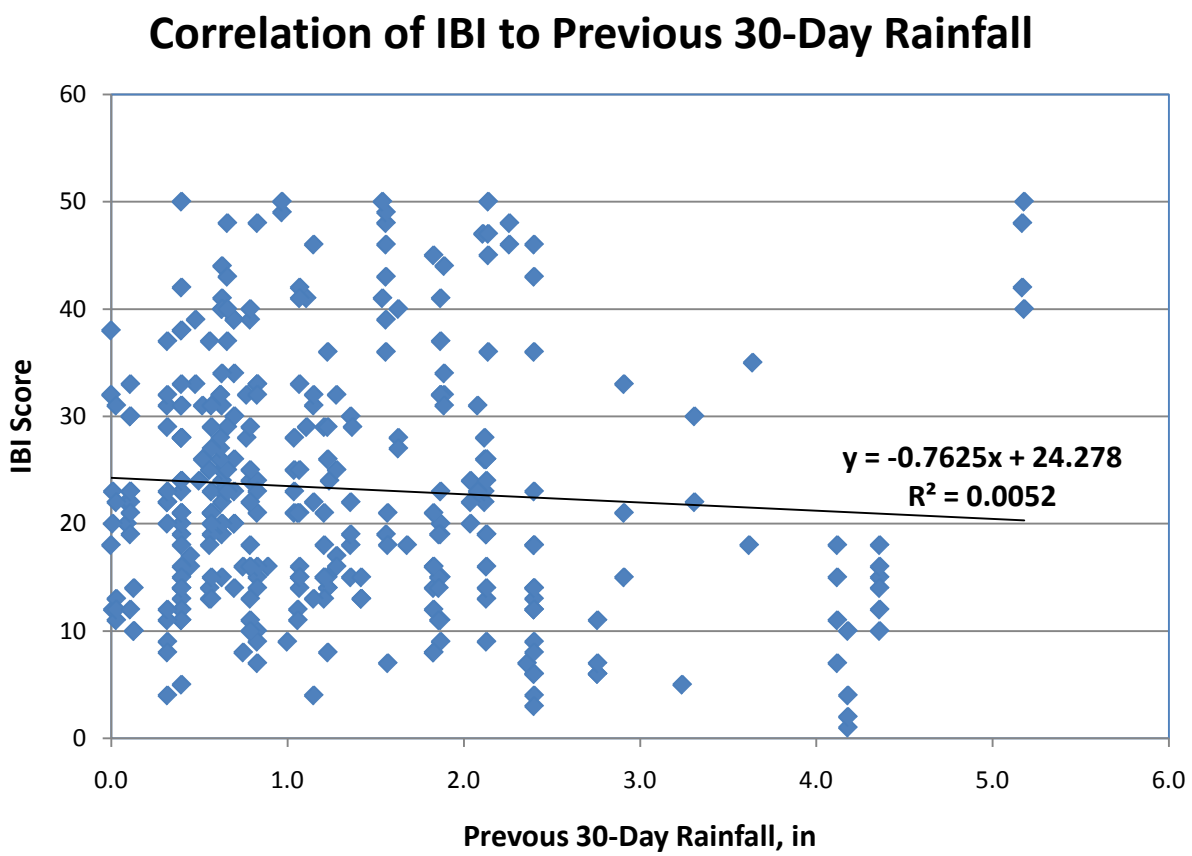


Figure 6. Correlation of 2001-2010 B-IBI Scores to 30 Day Prior Rainfall Amount

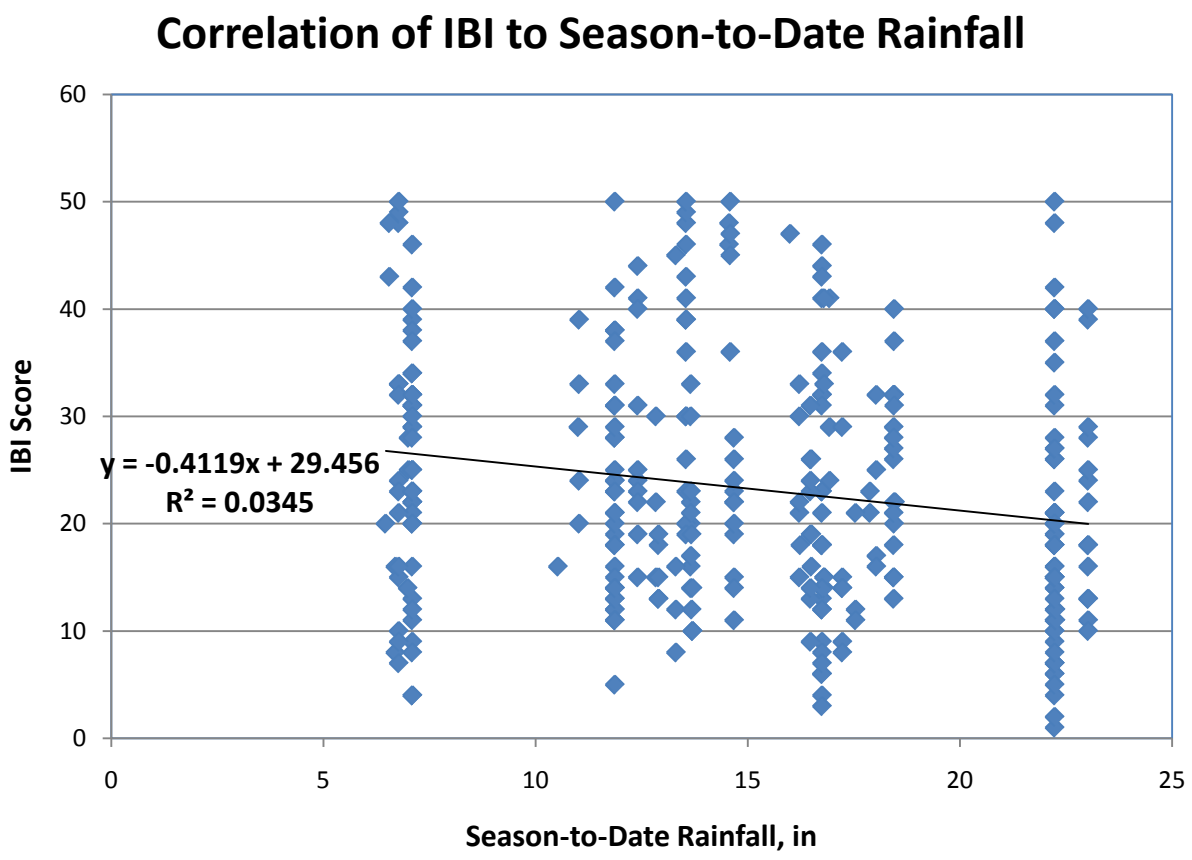


Figure 7. Correlation of 2001-2010 B-IBI Scores to Seasonal Cumulative Rainfall Amount

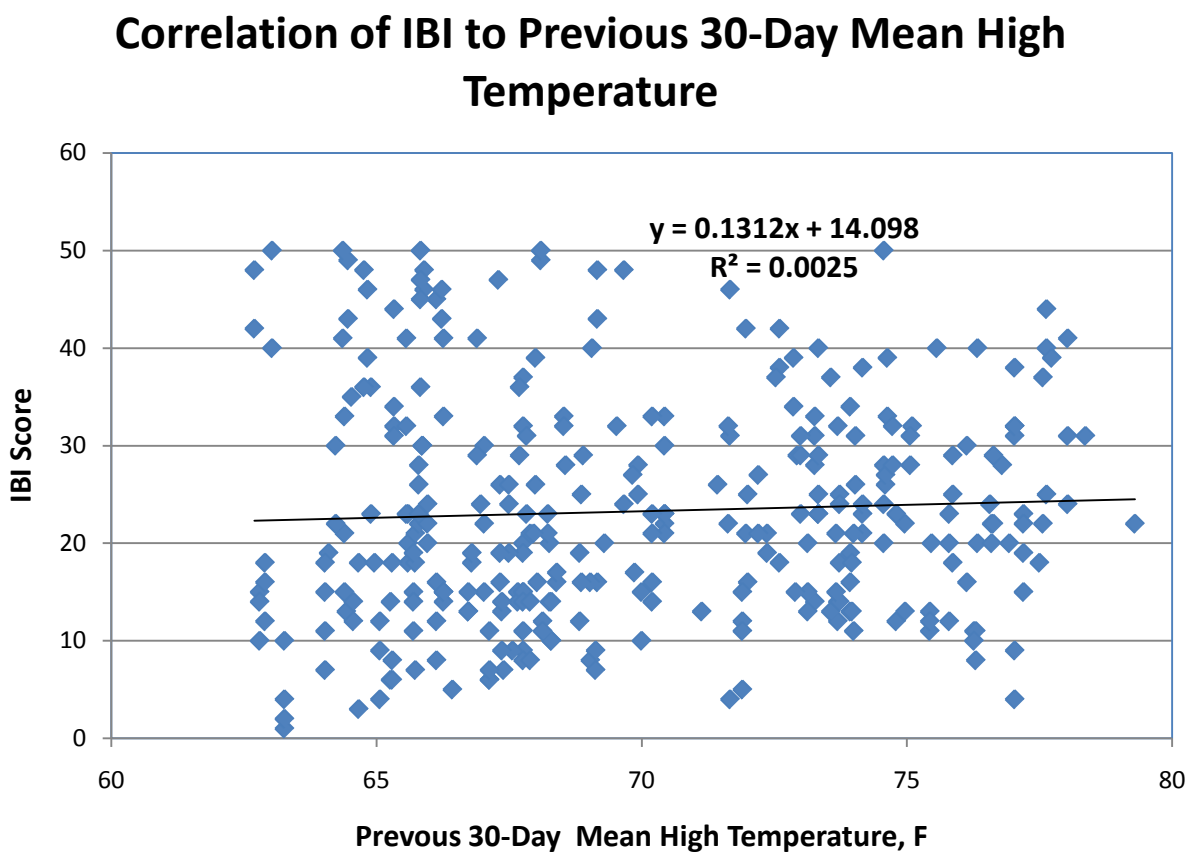


Figure 8. Correlation of 2001-2010 B-IBI Scores to 30 Day Prior Mean Daily High Temperature

3.3.2 Spatial Variation

Benthic community composition is affected by a variety of geographical features, including land use, underlying geology, and topography. Urbanization can affect the type and diversity of BMIs present at creek stations due to changes in hydrology, riparian vegetation, creek substrate, and water quality. Due to historical development patterns, urbanization in Contra Costa County typically decreases as elevation increases. In many watersheds, urbanization also decreases with increasing distance upstream from the creek mouth.

For recent years, BMI monitoring sites were characterized as being in "lower", "middle", or "higher" stream reach ranges, and the minimum, mean, and maximum B-IBI scores were compared for each group (see ARC, 2008, 2009, 2010). As shown in Figure 9, for the 2009 BMI sample results, the results of these comparisons support the idea that upper regions of watersheds tend to have higher B-IBI scores than lower regions. The mean and maximum in each category consistently increased from lower to middle to upper ranges of the watersheds tested in 2009. These spatial trends were consistent with those observed in the 2007 and 2008 data. (The number of sites sampled in 2010 was not sufficient to repeat this analysis with the 2010 data for this report.)

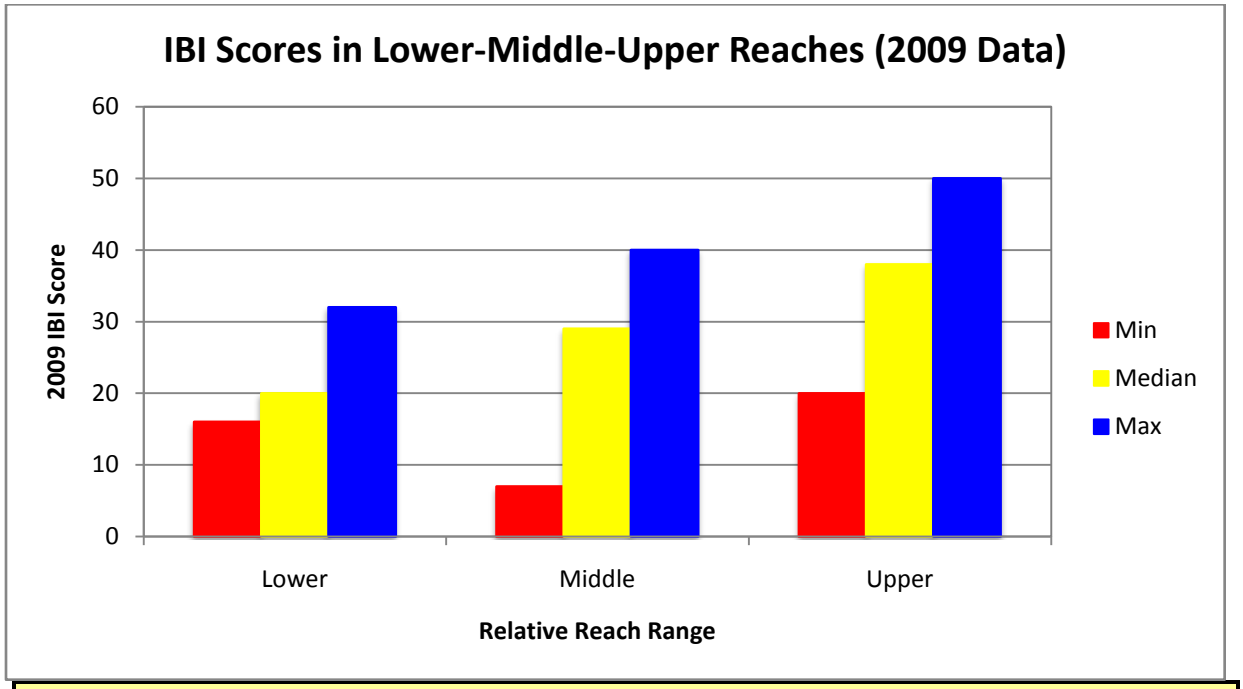


Figure 9. Comparisons of IBI Scores in Lower, Middle and Upper Creek Stations, 2009 Data

Using data from the cumulative 2001-2010 Contra Costa BMI data set, mean site B-IBI score was compared to site elevation (for those sites for which elevation is known with some certainty). As shown in Figure 10, the correlation is fairly strong, with average IBI score increasing with elevation.

To further test this relationship, the numerical portion of the site code was used as an analog for distance from the creek mouth, which in turn can be considered to be a potential indicator of urban influence (lower site codes generally occur in areas with higher development density). As shown in Figure 11, although the slope of the line indicates that, as expected, B-IBI score does increase with increasing distance from the creek mouth, site code was poorly correlated with mean site B-IBI score.

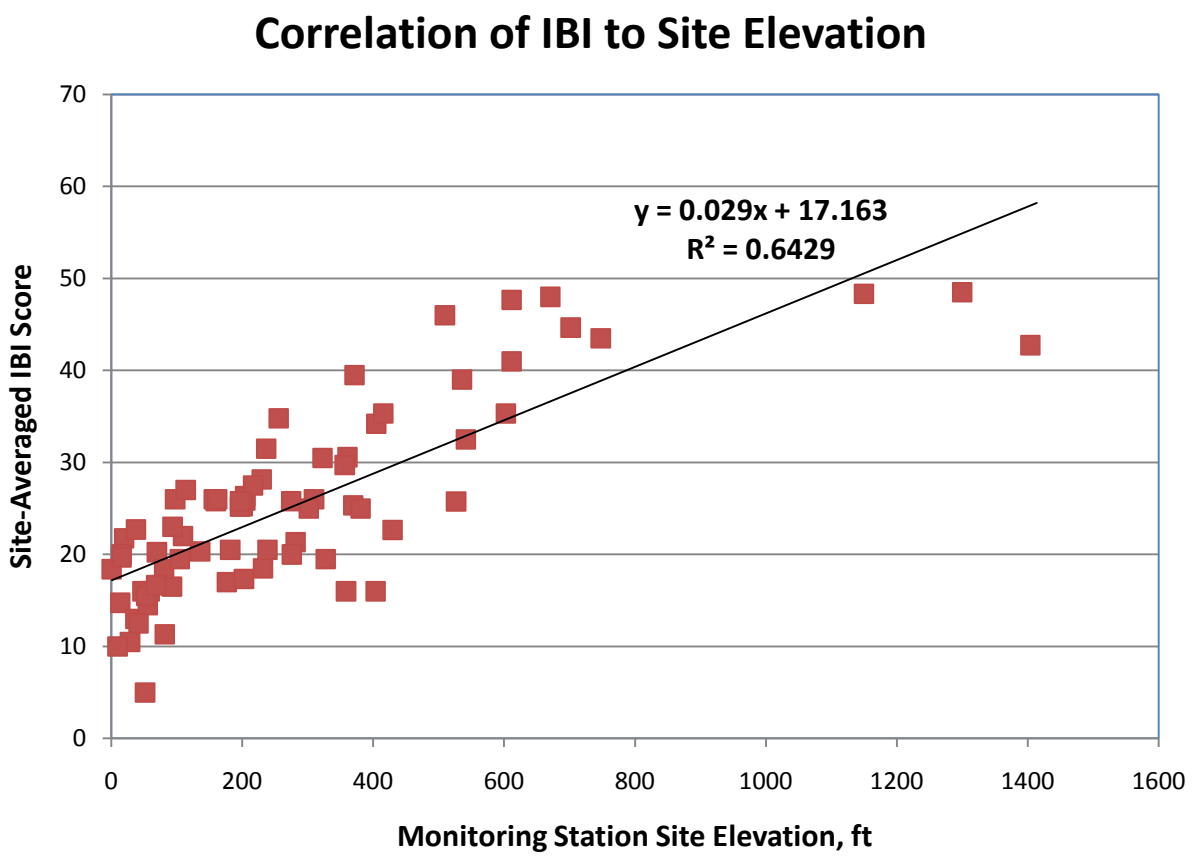


Figure 10. Correlation of 2001-2010 Mean Site IBI Scores to Site Elevations

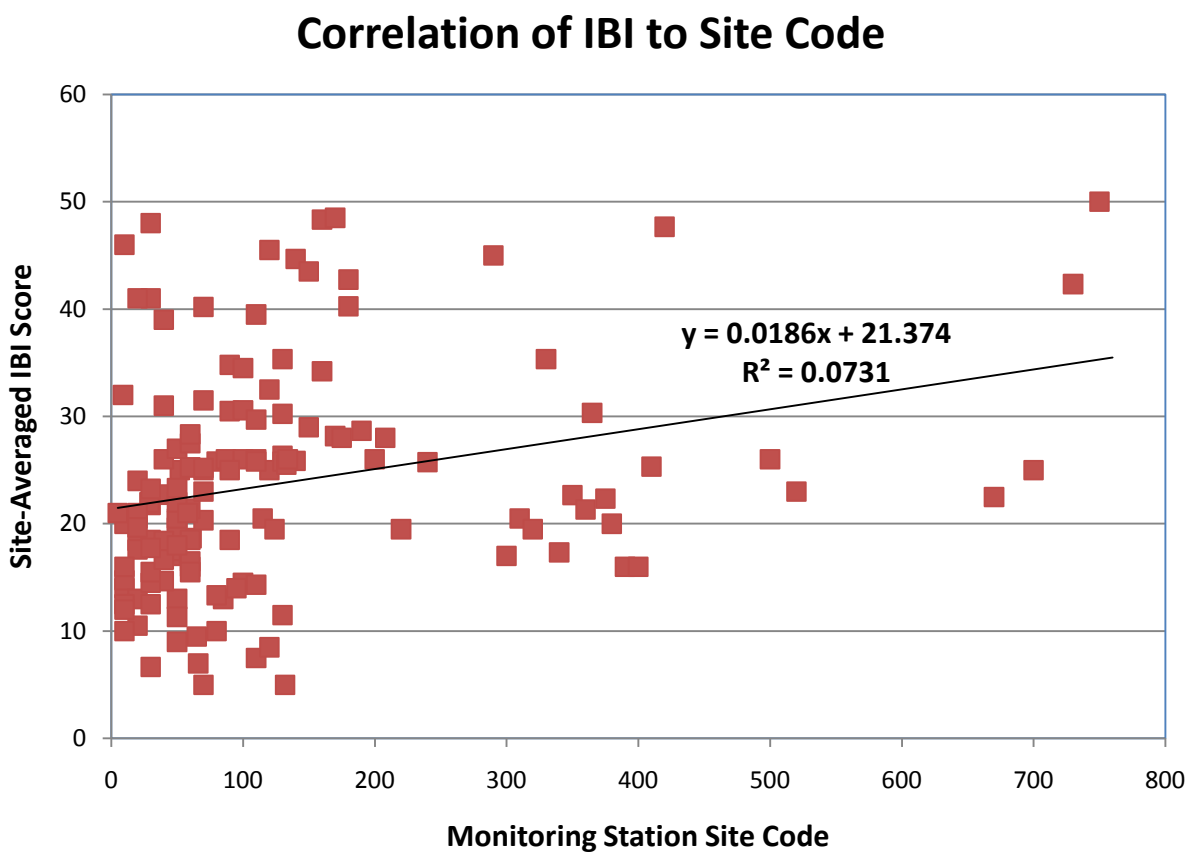


Figure 11. Correlation of 2001-2010 Mean Site IBI Scores to Numerical Site Codes

3.3.2 Reach-Scale Physical Habitat Quality

Physical habitat characteristics that may influence BMI assemblages include substrate composition and embeddedness, in-stream vegetation, channel alteration and canopy cover. These parameters were qualitatively assessed at each sampling station using the physical habitat assessment (PHAB) approach as provided in the 2007 SWAMP protocols, based substantially on procedures included in the U.S. Environmental Protection Agency's (EPA) Rapid Bioassessment Protocol (Barbour et al., 1999).

In 2007, 2008, and 2009, the PHAB scores were positively correlated with the B-IBI scores. The relationships each year were statistically significant, but the correlations were relatively weak. This analysis was not done for the 2010 data due to the relatively small number of data points available. Physical habitat condition is typically affected by the degree of development within a watershed. Additional investigation should be done to further illuminate how specific physical habitat factors influence BMI populations.

3.3.3 Invasive Species

BMI assemblages also can be impacted by invasive species. This appears to have happened at the WAN080 site in West Antioch Creek. Whereas in 2006 the sample from this site was dominated by chironomids and planariads, in both 2007 and 2008 the sample was dominated by Hydrobiidae, the family to which the invasive New Zealand mudsnail belongs. Confirmation of the New Zealand mud snail identification was provided by scientists from several institutions. The B-IBI score for this site dropped from 15 in 2006 to 14 in 2007, and to 11 in 2008. The 2006-to-2007 decrease was also seen at site WAN060, downstream of the site impacted by the documented presence of the New Zealand mud snail (site WAN060 was not monitored in 2008). The WAN080 site received the lowest IBI score of the 47 sites tested in 2008, with no other site receiving a B-IBI score lower than 17. These sites were not tested in 2009 or 2010. However, for the first time, New Zealand mudsnails (Potamopyrgus antipodarum) were positively identified in a sample collected from a site on Baxter Creek (site BAX030) in 2009. The 2009 B-IBI score for this site was not negatively affected in comparison to previous years, however (see figure, section 3.5.2; ARC, 2010), perhaps indicating that the invasive colonization may be in the early stages.

New Zealand mudsnails were not detected in any of the 12 samples collected in 2010. The lower Cerrito Creek site (CER010) sample was comprehensively checked for New Zealand mudsnails; none were found.

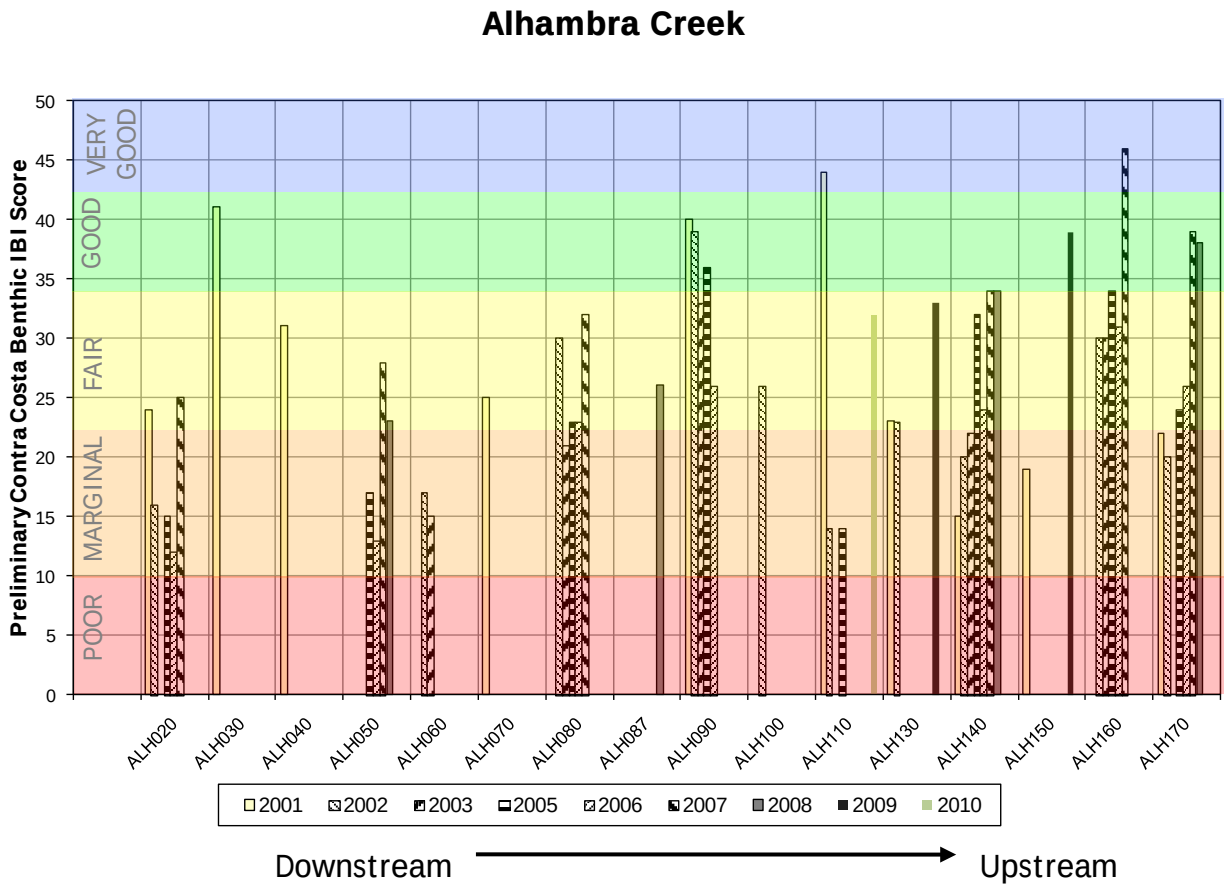
3.4 WATERSHED-SPECIFIC OBSERVATIONS

For the watersheds monitored in 2010, this section includes graphical presentations of all BMI monitoring results from 2001-2010, to allow for assessments of both spatial and temporal variation. The charts are arranged by site within each watershed, proceeding from downstream on the left side to upstream on the right. This also follows the site numbering system, which runs from lower to higher numbers as one proceeds from downstream to upstream within each watershed.

As in previous years, several 2010 samples contained less than the expected 500 organisms, indicating relatively low abundance of BMI organisms at these sites. These samples were collected from the following sites: MSH061, SPA175, WAL365, and WAL410. Three of these sites (MSH061, SPA175, WAL365) also had less than 500 organisms when sampled in 2009. Low abundance at these sites could reflect inherently low abundance at the site, or sampling in recently wetted areas where there was insufficient time for invertebrate colonization.

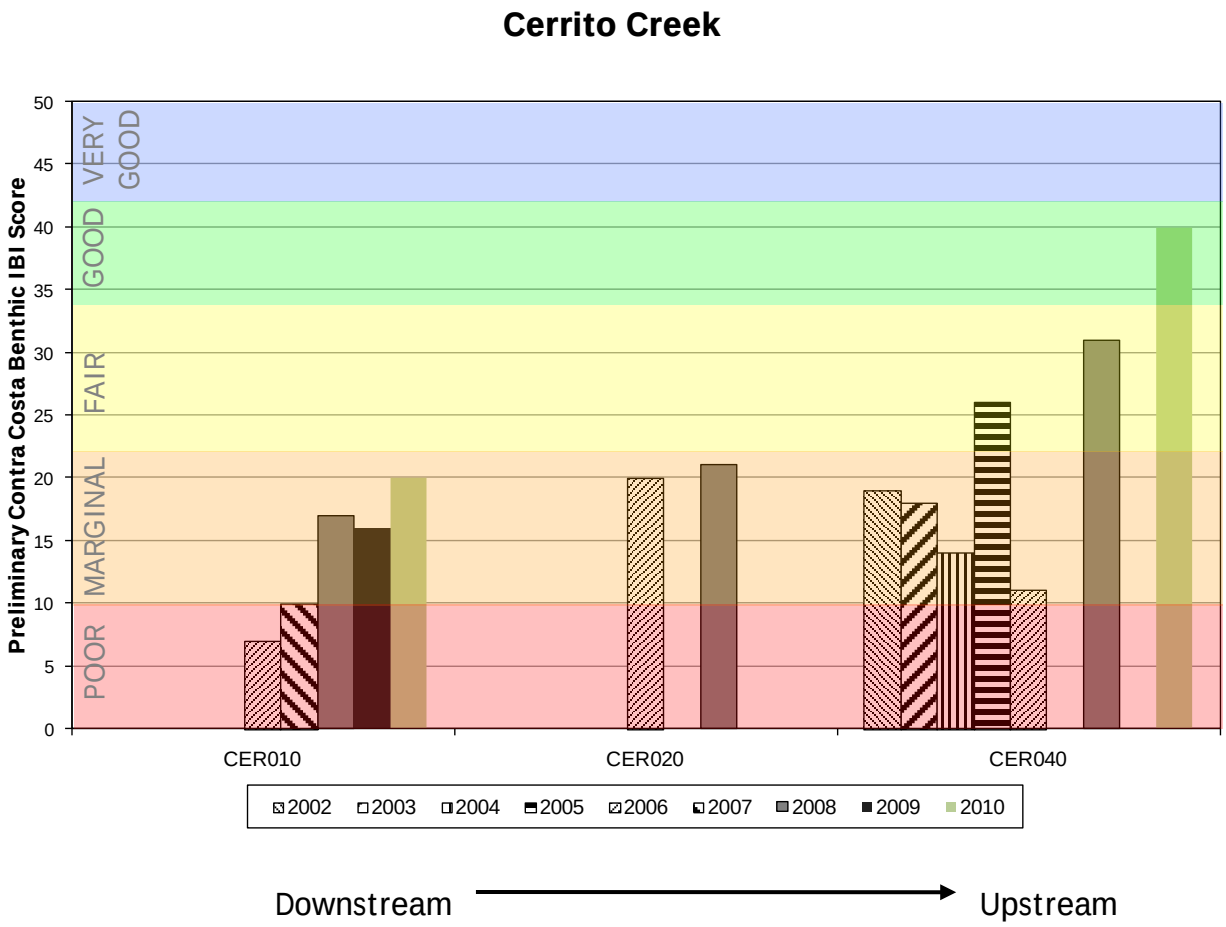
3.4.1 Alhambra Creek Watershed

Within the Alhambra Creek watershed the general condition of aquatic life uses in creeks appears to be fairly good, relative to other watersheds in Contra Costa County, as illustrated by the B-IBI scores.



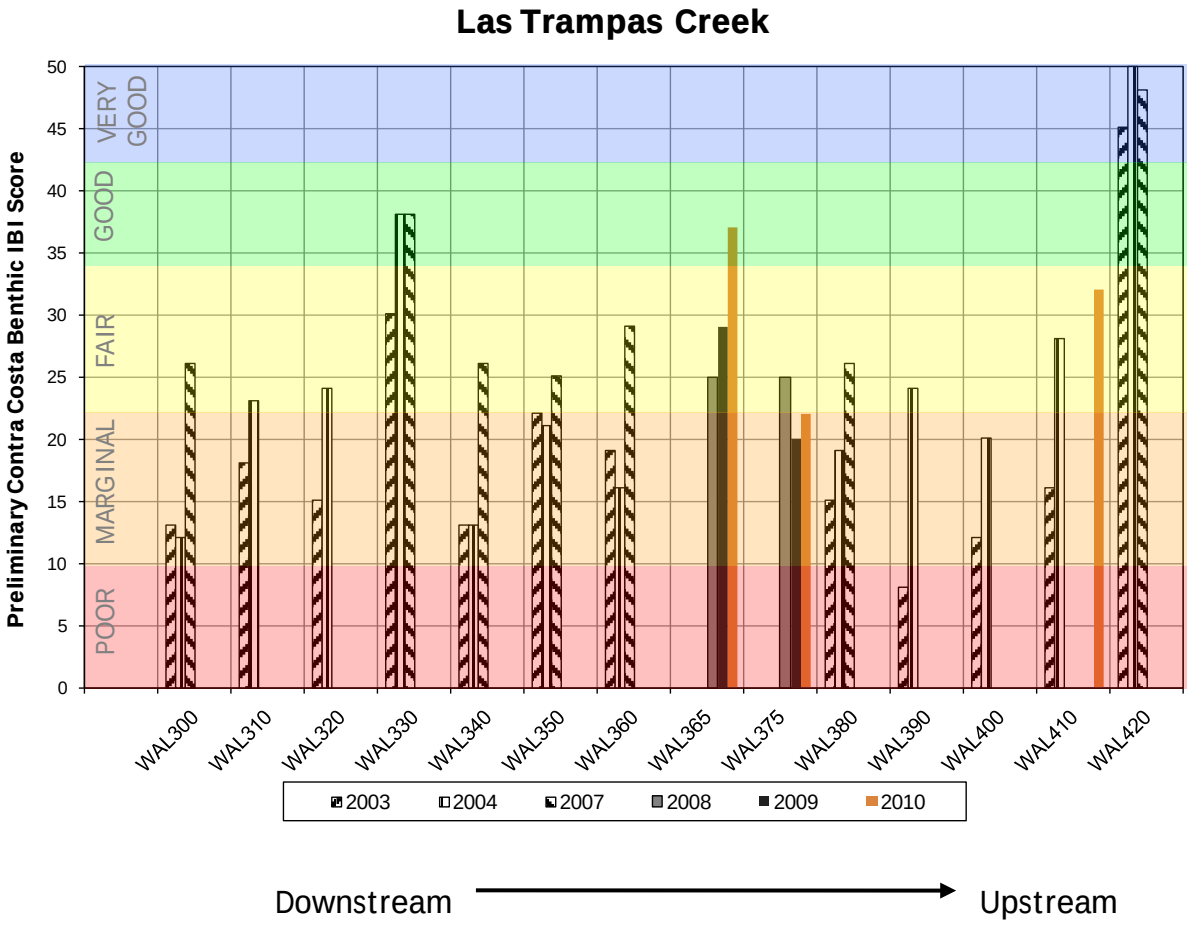
3.4.2 Cerrito Creek Watershed

Cerrito Creek watershed is also made up of predominately urban land uses, and creek channels have been heavily altered due the historical effects of urbanization. Therefore, it is not unexpected that stations within this watershed would generally have B-IBI scores within the poor to fair categories. These stations are dominated by short-lived, tolerant benthic macroinvertebrates that generally indicate stress on a system. For station CER040 the 2010 B-IBI score was the highest of several scores dating back to 2002.



3.4.3 Las Trampas Creek Watershed

With several exceptions, B-IBI scores for stations in the Las Trampas creek watershed have been fair to marginal. Stations WAL330 (Reliez Creek) and WAL420 (Las Trampas Creek) have had higher scores in the good to very good range on multiple occasions; these sites are located in the upper Walnut Creek watershed and predominately drain open space land uses and relatively large parcels of land. In contrast, other stations in the watershed are surrounded by residential and commercial development. In 2010, the samples from the WAL365 and WAL410 sites exhibited low overall BMI abundance, as indicated by a total organism count of less than 500 individuals.

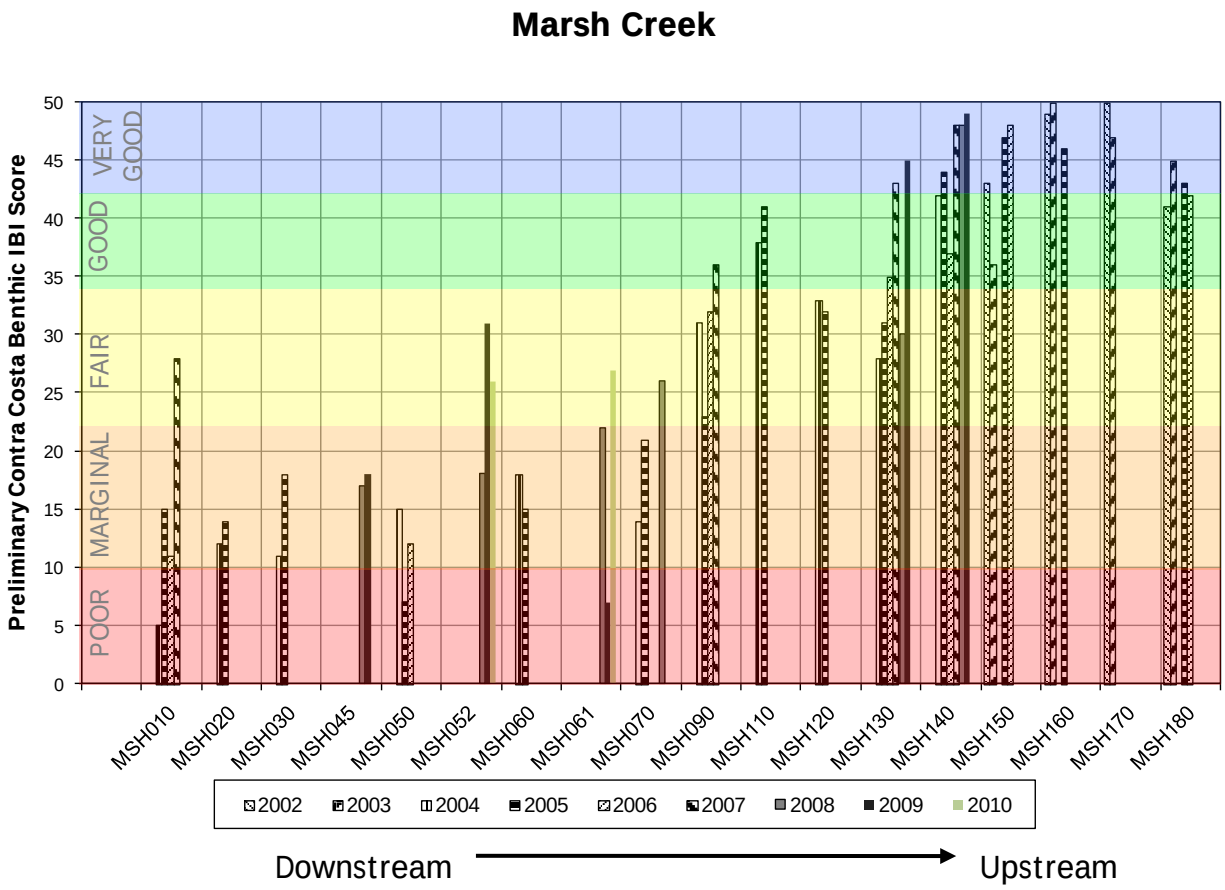


Note: the Las Trampas Creek sites are located within the Walnut Creek watershed.

3.4.4 Marsh Creek Watershed

In contrast to the upper watershed, stations in the lower watershed consistently generally score in the poor to marginal categories, and are dominated by short-lived tolerant benthic macroinvertebrates that generally indicate stress on a system. The low scores at stations in the Lower March Creek watershed, located downstream of the Marsh Creek reservoir (below MSH090), are likely due to the reduced habitat complexity caused by the straightening of the channel and lack of riparian habitat. Additionally, the reservoir itself reduces the amount of large substrate (e.g., cobbles and boulders) that can be transported to the sections of the creek directly below the dam, and therefore likely reduces the diversity of BMI habitat available. Samples from these lower watershed sites also tend to have lower overall BMI abundance, as indicated by a total organism count of less than 500 individuals; this includes the site sampled in 2010 (MSH061).

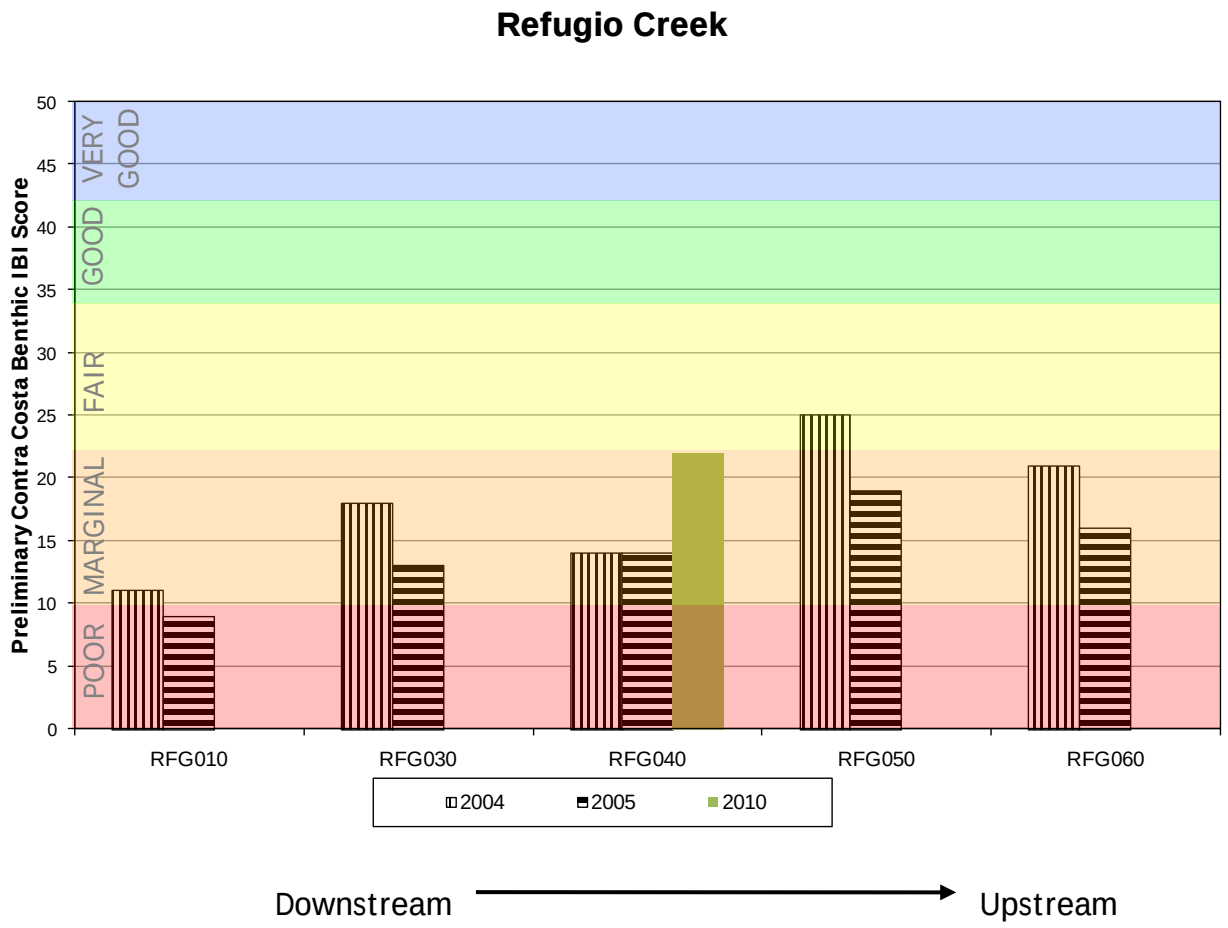
However, the sites in the Upper Marsh Creek watershed, above the dam (MSH090 and above), range generally in the fair to very good categories. A mercury mine is located in the region between sites MSH130 and MSH140. IBI scores are typically higher in the upstream location (MSH140).



Notes: Marsh Creek Reservoir is located between sites MSH070 and MSH090

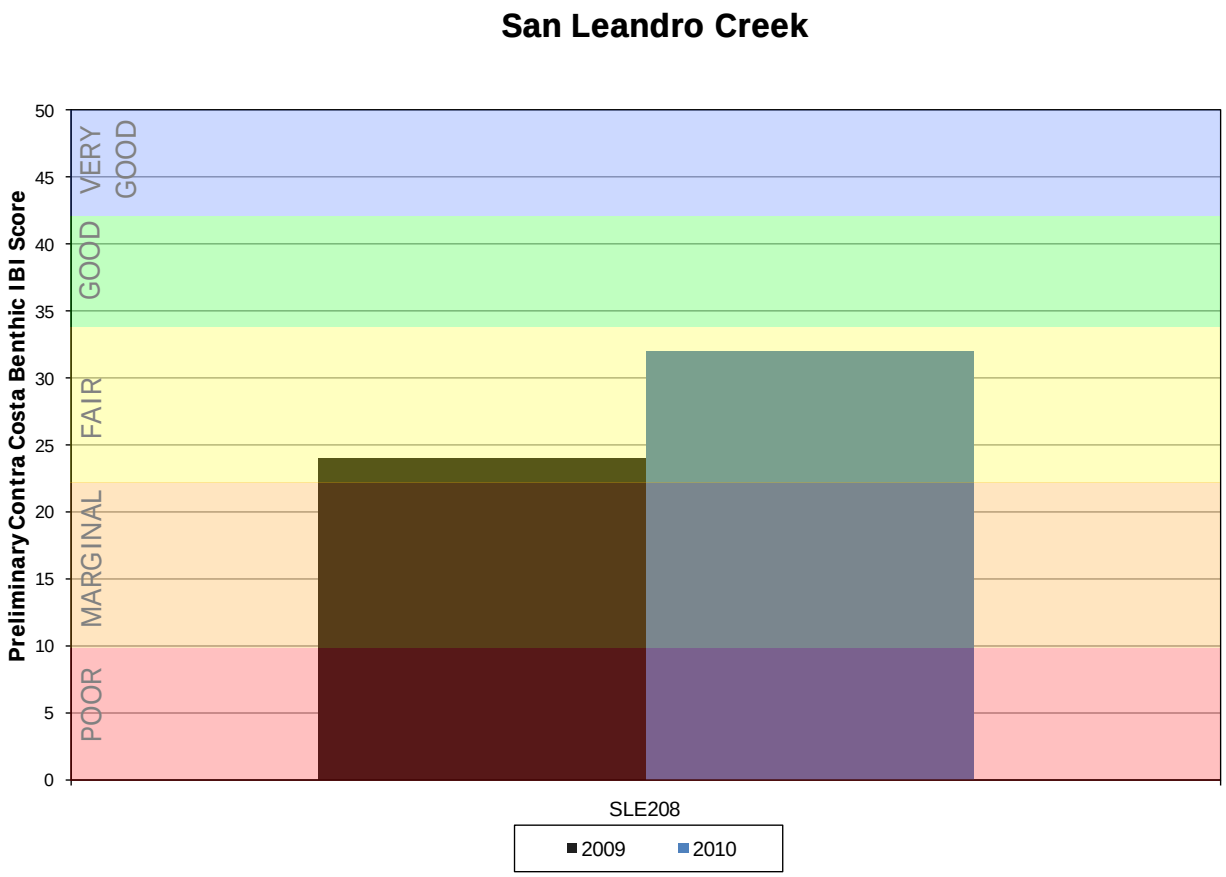
3.4.5 Refugio Creek Watershed

B-IBI scores generally have been in the marginal range for stations within Refugio Creek. Several sites were sampled in 2004 and 2005; a single mid-range site was sampled again in 2010. The Rheem Creek 2005 B-IBI scores were generally lower than the 2004 scores.



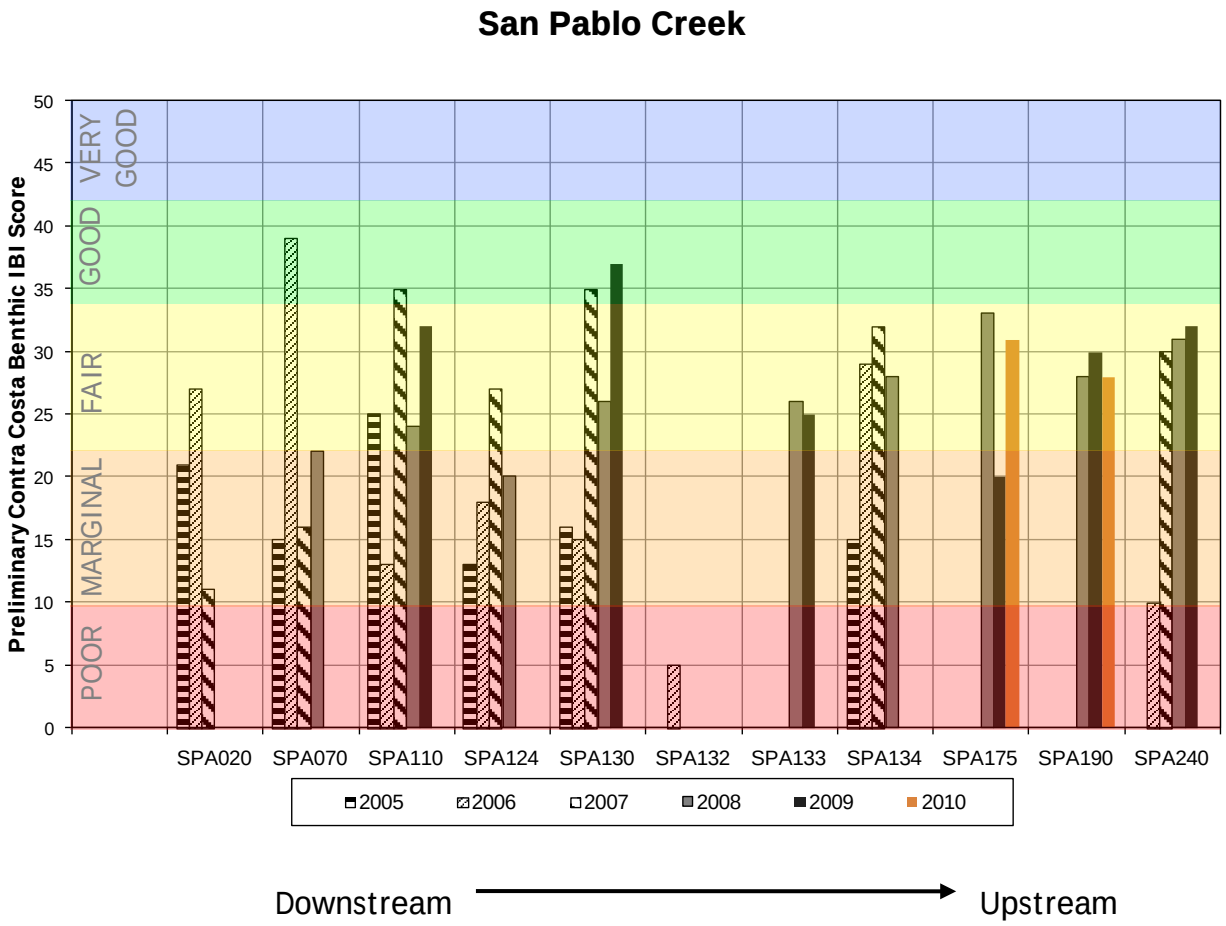
3.4.6 San Leandro Creek Watershed

A site on Moraga Creek, in the San Leandro Creek watershed, was monitored for the first time in 2009; this site was repeated in 2010, with a substantially better score in 2010.



3.4.7 San Pablo Creek Watershed

The condition of aquatic life uses in creek stations located in the San Pablo Creek watershed appears to be highly variable from site to site and year to year. In 2010, the sample from the SPA175 site exhibited low overall BMI abundance, as indicated by a total organism count of less than 500 individuals.



Note: San Pablo Reservoir is located between sites SPA134 and SPA175.
Note also: due to a site coding error in 2008, the site previously labeled as SPA220 is in fact SPA175, and the site previously labeled as SPA228 is in fact SPA190; the 2008 data were relabeled accordingly in the graph above.

3.5 CUMULATIVE RESULTS, 2001-2010

During the ten-year period, 2001-2010, bioassessment monitoring was performed at 141 sites, representing 20 watersheds in Contra Costa County, with over 400 samples analyzed for BMI identification. Descriptive statistics (minimum, maximum, mean and median) were computed for each site sampled, for all B-IBI scores derived from BMI monitoring conducted during 2001-2010, along with the first and last year sampled, and the number of years sampled at each site; see Appendix H.

Marsh Creek, June, 2010

4.0 CONCLUSIONS AND RECOMMENDATIONS

During the ten-year period, 2001-2010, bioassessment monitoring was performed at 141 sites, representing 20 of the 29 major watersheds in Contra Costa County, with over 400 samples analyzed for benthic macroinvertebrate (BMI) community composition.

In 2010, the Contra Costa Volunteer Creek Monitoring Program conducted bioassessment monitoring at a reduced level compared to prior years, with monitoring performed at 12 creek sampling stations, within 7 watersheds in Contra Costa County. To provide a measurement of Aquatic Life Use condition at these stations, a preliminary Benthic Index of Biotic Integrity (B-IBI) score was calculated for each station. The B-IBI score is based on a set of metrics computed from the raw BMI taxonomic data, according to the approach developed previously for creeks in Contra Costa County. The B-IBI scores were then attributed to aquatic life use condition categories (poor, marginal, fair, good, or very good), based on a standardized grading system that assigns specific ranges of B-IBI scores to the categories.

Results from the 2010 bioassessment monitoring indicate that B-IBI scores from the majority (58%) of creek stations sampled in Contra Costa County fell in the fair category, with the remainder of the 2010 stations scoring in either the good (17%) or marginal (25%) categories. Because of the relatively low number of sites monitored, the 2010 results cannot be reliably extrapolated as being more broadly representative of Contra Costa County watersheds.

New Zealand mudsnails (*Potamopyrgus antipodarum*) were not present in any of the 12 samples collected in 2010.

BMI community composition and the resulting B-IBI scores vary both spatially throughout Contra Costa County (due to differences in geographical factors, including land use, underlying geology, and topography) and temporally (due particularly to annual and seasonal differences in climate and weather, especially hydrological factors). Analysis was performed to assess both temporal and spatial variation in B-IBI scores over the ten-year period of bioassessment monitoring.

Annual variability in average IBI scores is attributable to a number of factors, including antecedent (preceding) rainfall and other climatological conditions, as well as monitoring site selection for that year. Prior analysis of the 2006-09 BMI metrics indicated that annual rainfall amount and antecedent spring rainfall amount may affect average BMI community composition in a given year.

Additional, detailed analysis conducted with the ten-year (2001-2010) data set indicated that certain climatological factors (prior 30-day rainfall total, cumulative seasonal rainfall to date, and prior 30-day average high temperature) did not correlate well with site-and-date-specific B-IBI scores. The effects of these climatological factors on BMI community composition seem to be overwhelmed by the spatial differences among sites at any given time.

Selected geographical factors that may influence benthic community composition at bioassessment monitoring sites throughout Contra Costa County were evaluated using average site B-IBI scores from the ten-year (2001-2010) data set. This analysis confirmed that elevation correlates significantly with mean site B-IBI score, with higher average B-IBI scores generally occurring at higher elevations. This may reflect prevailing land use, as the degree of urbanization tends to decrease with increasing elevation in Contra Costa County. The various effects of urbanization (changes in hydrology, riparian vegetation, creek substrate, and water quality) may be reflected therefore in the correlation of B-IBI scores with elevation.

Recommendations

The following recommendations are made for CCMAP monitoring and data analysis:

- Continue analysis of the influence of climatic factors - such as seasonal rainfall - on annual average B-IBI scores and the underlying metrics. Following completion of the 2011 BMI monitoring, include the eleven years of BMI monitoring results in an analysis of the correlation of hydrographic factors with the B-IBI scores and underlying metrics, and with annual changes in the relative species assemblages. Include consideration of: BMI sample timing (seasonally), antecedent conditions prior to sampling, and duration and intensity of major rainfall events. Derive recommendations applicable to future BMI monitoring, including for example guidance regarding the appropriate timeframe for BMI sample collection.
- Assess the effects of the types of sites selected (e.g., relative numbers of sites in low-medium-high elevation ranges) on annual average B-IBI scores.
- Perform additional analysis regarding the influences of land use and physical habitat factors on benthic status, for example by analysis of indicators of degree of urbanization (such as population density or percentage watershed impervious surface), canopy cover, or type of channel construction vs. B-IBI score.
- Perform additional analysis regarding the influences of various water quality parameters on B-IBI scores. Include consideration of the potential effects of urban runoff pollutants. Derive recommendations for acquisition of additional data needed for this analysis as part of the monitoring to be performed under the Municipal Regional Stormwater Permit.
- Incorporating the results of the previous four recommendations, perform an analysis of the complete CCMAP BMI monitoring data set in an effort to answer the five key management questions shown in Table 1. For management questions 3 and 4 in particular, additional water quality data will be necessary.
- To facilitate standardization in site naming and locations, refer to the master list of current-year sampling locations each year prior to commencing field work, and provide field personnel with field data sheets that are pre-printed with site name, site code and location, which will then be field-verified.
- Accommodate assessment of the presence of the New Zealand mud snail within the BMI identification process. Continue to pay careful attention to decontamination of sampling equipment to prevent cross-contamination of monitoring sites. Work with DF&G to identify an acceptable means of assessing the presence of this invasive species.

5.0 REFERENCES

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APPENDIX A – 2010 MONITORING SITE PHOTOGRAPHS

Photos from all sites monitored in 2010 (on CD-ROM)

APPENDIX B – SAMPLE PHYSICAL HABITAT (PHAB) FIELD DATA SHEET AND SWAMP STREAM CHARACTERIZATION FORM

CALIFORNIA DEPARTMENT OF FISH AND GAME
AQUATIC BIOASSESSMENT LABORATORY

WATER POLLUTION CONTROL LABORATORY
REVISION DATE-- MAY 1999

PHYSICAL HABITAT QUALITY
(California Stream Bioassessment Procedure)

WATERSHED/ STREAM: _____ DATE/ TIME: _____

COMPANY/ AGENCY: _____ SAMPLE ID NUMBER: _____

SITE DESCRIPTION: _____

Circle the appropriate score for all 20 habitat parameters. Record the total score on the front page of the CBW.

Parameters to be evaluated within the sampling reach

HABITAT PARAMETER	CONDITION CATEGORY			
	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover	Greater than 70% (50% for low gradient streams) of substrate favorable for epifaunal colonization and fish cover; most favorable is a mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% (30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% (10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% (10% for low gradient streams) stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/ Depth Regimes *(deep<0.5 m, slow<0.3 m/s)*	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow).	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

CALIFORNIA DEPARTMENT OF FISH AND GAME
AQUATIC BIOASSESSMENT LABORATORY

WATER POLLUTION CONTROL LABORATORY
REVISION DATE-- MAY 1999

Parameters to be evaluated in an area longer than the sampling reach

HABITAT PARAMETER	CONDITION CATEGORY			
	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left of right side by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities haveimpacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0

REACH DOCUMENTATION

Standard Reach Length (wetted width ≤ 10 m) = 150 m Distance between transects = 15 m
Alternate Reach Length (wetted width >10 m) = 250 m Distance between transects = 25 m

Project Name:	Date:	Time:
Stream Name:	Site Name/ Description:	
Site Code:	Crew Members:	
Latitude: °N	datum: NAD27 NAD83	
Longitude: °W		

AMBIENT WATER QUALITY MEASUREMENTS					
Temperature (°C)		Dissolved O_2 (mg/L)		pH	
Specific Cond. (µs)		Dissolved O_2 Saturated		Alkalinity (mg/L)	

REACH LENGTH			
150 m		Other	
Actual Length (m)			
Explanation:			

DISCHARGE MEASUREMENTS (first measurement = left bank)
Check if measurement not possible. ☐

VELOCITY AREA METHOD (preferred)				Transect Width:			
	Distance from Bank (cm)	Depth (cm)	Velocity (m/sec)		Distance from Bank (cm)	Depth (cm)	Velocity (m/sec)
1				11			
2				12			
3				13			
4				14			
5				15			
6				16			
7				17			
8				18			
9				19			
10				20			

NOTABLE FIELD CONDITIONS (check one box per topic)

Evidence of recent rainfall (enough to increase surface runoff)	NO		minimal		>10% flow increase	
Evidence of fires in reach or immediately upstream (<500 m)	NO		< 1 year		< 5 years	
Dominant landuse/ landcover in area surrounding reach	Agriculture		Forest		Rangeland	
	Urban/ Indus		Suburb/ Town		Other	

Site Code:	Site Name:	Date:

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: A

FLOW HABITATS (% between transects, T=100%)	
Channel Type	**%**
Cascade/ Fall	
Rapid	
Riffle	
Run	
Glide	
Pool	
Dry	

DENSIOMETER READINGS (0-17) *count covered dots*	
Center Left	
Center Upstream	
Center Down-stream	
Center Right	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

PHOTOGRAPHS:	A (up):	A (down):

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: B

FLOW HABITATS (% between transects, T=100%)	
Channel Type	**%**
Cascade/ Fall	
Rapid	
Riffle	
Run	
Glide	
Pool	
Dry	

DENSIOMETER READINGS (0-17) *count covered dots*	
Center Left	
Center Upstream	
Center Down-stream	
Center Right	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: C

FLOW HABITATS (% between transects, T=100%)	
Channel Type	**%**
Cascade/ Fall	
Rapid	
Riffle	
Run	
Glide	
Pool	
Dry	

DENSIOMETER READINGS (0-17) *count covered dots*	
Center Left	
Center Upstream	
Center Down-stream	
Center Right	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Site Code:	Site Name:	Date:

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: D

FLOW HABITATS (% between transects, T=100%)		DENSIOMETER READINGS (0-17) *count covered dots*		BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Channel Type	%	Center Left		Left Bank	eroded	vulnerable	stable
Cascade/ Fall		Center Upstream		Right Bank	eroded	vulnerable	stable
Rapid		Center Down-stream					
Riffle		Center Right					
Run							
Glide							
Pool							
Dry							

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: E

FLOW HABITATS (% between transects, T=100%)		DENSIOMETER READINGS (0-17) *count covered dots*		BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Channel Type	%	Center Left		Left Bank	eroded	vulnerable	stable
Cascade/ Fall		Center Upstream		Right Bank	eroded	vulnerable	stable
Rapid		Center Down-stream					
Riffle		Center Right					
Run							
Glide							
Pool							
Dry							

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: F

FLOW HABITATS (% between transects, T=100%)		DENSIOMETER READINGS (0-17) *count covered dots*		BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Channel Type	%	Center Left		Left Bank	eroded	vulnerable	stable
Cascade/ Fall		Center Upstream		Right Bank	eroded	vulnerable	stable
Rapid		Center Down-stream					
Riffle		Center Right					
Run							
Glide							
Pool							
Dry							

PHOTOGRAPHS:	F (up):	F (down):

Site Code:	Site Name:	Date:

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: G

FLOW HABITATS (% between transects, T=100%)		DENSIOMETER READINGS (0-17) *count covered dots*		BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Channel Type	%	Center Left		Left Bank	eroded	vulnerable	stable
Cascade/ Fall		Center Upstream		Right Bank	eroded	vulnerable	stable
Rapid		Center Down-stream					
Riffle		Center Right					
Run							
Glide							
Pool							
Dry							

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: H

FLOW HABITATS (% between transects, T=100%)		DENSIOMETER READINGS (0-17) *count covered dots*		BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Channel Type	%	Center Left		Left Bank	eroded	vulnerable	stable
Cascade/ Fall		Center Upstream		Right Bank	eroded	vulnerable	stable
Rapid		Center Down-stream					
Riffle		Center Right					
Run							
Glide							
Pool							
Dry							

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: I

FLOW HABITATS (% between transects, T=100%)		DENSIOMETER READINGS (0-17) *count covered dots*		BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Channel Type	%	Center Left		Left Bank	eroded	vulnerable	stable
Cascade/ Fall		Center Upstream		Right Bank	eroded	vulnerable	stable
Rapid		Center Down-stream					
Riffle		Center Right					
Run							
Glide							
Pool							
Dry							

Site Code:	Site Name:	Date:

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: J

FLOW HABITATS (% between transects, T=100%)	
Channel Type	**%**
Cascade/ Fall	
Rapid	
Riffle	
Run	
Glide	
Pool	
Dry	

DENSIOMETER READINGS (0-17) *count covered dots*	
Center Left	
Center Upstream	
Center Down-stream	
Center Right	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

Wetted Width (m):	Bankfull Width (m):	Bankfull Height:	Transect: K

FLOW HABITATS (% between transects, T=100%)	
Channel Type	**%**
Cascade/ Fall	
Rapid	
Riffle	
Run	
Glide	
Pool	
Dry	

DENSIOMETER READINGS (0-17) *count covered dots*	
Center Left	
Center Upstream	
Center Down-stream	
Center Right	

BANK STABILITY 5m up and 5m downstream of transect and from bankfull to wetted width			
Left Bank	eroded	vulnerable	stable
Right Bank	eroded	vulnerable	stable

PHOTOGRAPHS:	K (up):	K (down):

REACH SLOPE (BASIC PHAB, Reach Based use as many segments as needed)	METHOD	CL		HL		TR		HL	

SEGMENT 1		SEGMENT 2		SEGMENT 3		SEGMENT 4		SEGMENT 5		SEGMENT 6	
Slope (%) or Elevation Difference (cm)		Slope (%) or Elevation Difference (cm)		Slope (%) or Elevation Difference (cm)		Slope (%) or Elevation Difference (cm)		Slope (%) or Elevation Difference (cm)		Slope (%) or Elevation Difference (cm)	
	% cm		% cm		% cm		% cm		% cm		% cm
Segment Length		Segment Length		Segment Length		Segment Length		Segment Length		Segment Length	
Bearing		Bearing		Bearing		Bearing		Bearing		Bearing	
Propor-tion (%)		Propor-tion (%)		Propor-tion (%)		Propor-tion (%)		Proportion (%)		Proportion (%)	

APPENDIX C – COMPLETED PHYSICAL HABITAT (PHAB) FIELD DATA SHEETS AND SWAMP STREAM CHARACTERIZATION FORMS, 2010

Completed Physical Habitat field data sheets and SWAMP Stream Habitat Characterization Forms from all sites monitored in 2010 (on CD-ROM).

SUMMARY OF FIELD MEASUREMENTS AND PHYSICAL HABITAT ASSESSMENT SCORES FOR SITES SAMPLED IN 2010

Site Code	Stream Name	Site Name	Date	Time	Temp. (˚C)	Diss. Oxygen (mg/L)	Diss. Oxygen % Satur.	pH	Spec. Cond. (µS)	Alk. (mg/L)	Reach Length (m)	PHAB Score
ALH110	Alhambra Creek	Alhambra Cr. above Franklin Cr.	6/17/2010	14:00	15.9	9.50	84.00%	8.00	1369	520	150	121
CER040	Cerrito Creek	El Cerrito Plaza at Culvert	6/23/2010	9:00	15.6	10.50	105.00%	8.30	785	360	150	151
MSH052	Lower Marsh Creek	Between Dainty and Balfour	6/20/2010	15:00	23.6	13.60	118.00%	8.90	885	200	150	109
MSH061	Lower Marsh Creek	Creekside Park	6/20/2010	9:45	16.7	7.00	86.00%	7.80	757	180	150	94
RFG040	Refugio Creek	Refugio Creek above Country Run Road	6/28/2010	9:00	17.9	6.60	69.80%	7.80	2443	440	150	116
SPA175	San Pablo Creek	San Pablo Creek in Wagner Ranch Nature Area	6/27/2010	9:30	15.5	9.50	94.90%	7.70	175	80	150	158
SPA190	San Pablo Creek	EBMUD Orinda Treatment Plant	6/19/2010	9:30	13.4	9.50	92.00%	8.15	930	340	150	141
WAL365	Lafayette Creek	Village Center	6/26/2010	13:30	16.0	8.30	84.20%	8.00	714	400	150	99
WAL375	Las Trampas Creek	Leigh Creekside Park	6/26/2010	9:40	15.5	8.30	84.00%	8.10	1110	400	150	107
WAL410	Las Trampas Creek	Las Trampas Cr. above Grizzly Creek	6/21/2010	9:40	15.5	7.20	73.00%	7.80	919	500	150	142

Notes:
Site names and locations have been standardized. All other information in this table is derived directly from the field data sheets.
The Lafayette Creek and Las Trampas Creek sites are located within the Walnut Creek watershed.
PHAB data were not collected for the lower Cerrito Creek site (CER010) or Moraga Creek.

DATA QUALITY ASSESSMENT - OVERVIEW

During each year of data collection, the Contra Costa Clean Water Program and/or the Volunteer Creek Monitoring Program have conducted quality assurance procedures based on guidance from the California Department of Fish and Game and SWAMP.

To assess the accuracy of field data collection techniques, duplicate samples are collected annually in the field from at least 10% of the sites sampled during that year. Organisms identified in the original sample are compared with those identified in the duplicate sample using species similarity measurements. Past results of these comparisons consistently indicated that duplicate and original samples were at least 80% similar, suggesting that the accuracy of field measurements was high (Cressey and Sommers 2002, 2003, 2004, 2005, 2006).

In addition to field duplicate quality assurance measurements, each year at least 10% of the samples enumerated are analyzed a second time by an independent laboratory for discrepancies in taxonomic identification, and any such discrepancies are reviewed and resolved.

Procedures and results of these efforts are briefly summarized below for the 2010 data collection effort.

2010 QC SUMMARY – Completeness/Representativeness

The following 2010 samples contained less than the expected 500 organisms, indicating relatively low abundance of BMI organisms at these sites:

MSH061
SPA175
WAL365
WAL410

The low abundance illustrated by these low sample counts could be due to inherently low abundance at the sites, or due to sampling in recently-wetted areas where there was insufficient time for invertebrate colonization.

2010 QC SUMMARY - Field Duplicates

One field duplicate sample (for site CER040) was submitted to the BSI lab and analyzed in 2010. For the various metrics associated with these four samples, relative percent difference (RPD) was calculated between the original and duplicate samples, as a means of assessing precision in the field collection and analytical processes. For the 2010 duplicate, the average RPD was 11% for the standard set of BMI metrics (i.e., the metrics were on average 89% similar). An acceptable level of difference between duplicates is normally considered to be 20-25%.

2010 QC SUMMARY – Inter-lab Comparisons

Inter-lab comparative analysis was performed on one 2010 CCMAP sample by the Aquatic Bioassessment Laboratory–Chico (ABL), at California State University, Chico. The QC analysis was performed in accordance to the Southwest Association of Freshwater Invertebrate Taxonomists (SAFIT)'s Standard Taxonomic Effort Document (STE) 28 November 2006 version (Richards and Rogers, 2006). Results of the inter-laboratory quality control indicated no taxonomic discrepancies and no enumeration discrepancies.

The raw inter-laboratory QC data files are available through the CCMAP.

Taxonomic list of benthic macroinvertebrates identified in samples from Contra Costa County stream sites, spring 2010.

Phylum / Class / Order / Family / Final ID	CTV[1]	FFG[2]
Arthropoda		
Insecta		
Coleoptera		
Dytiscidae		
Agabus	8	p
Elmidae		
Optioservus	4	sc
Diptera		
Ceratopogonidae		
Bezzia/ Palpomyia	6	p
Ceratopogonidae	6	p
Chironomidae		
Chironomini	6	cg
Orthocladiinae	5	cg
Tanypodinae	7	p
Tanytarsini	6	cg
Dixidae		
Dixella	2	cg
Dolichopodidae		
Dolichopodidae	4	p
Empididae		
Empididae	6	p
Neoplasta	6	p
Muscidae		
Muscidae	6	p
Pelecorhynchidae		
Glutops	3	p
Psychodidae		
Psychoda	10	cg
Sciomyzidae		
Sciomyzidae	6	p
Simuliidae		
Simulium	6	cf
Tipulidae		
Antocha	3	cg
Limonia	6	sh
Pedicia	6	p
Tipula	4	om
Ephemeroptera		
Baetidae		
Baetis	5	cg
Fallceon quilleri	4	cg
Leptophlebiidae		
Paraleptophlebia	4	cg

Siphlonuridae			
Siphlonurus	7	cg	
Odonata			
Aeshnidae			
Aeshnidae	5	p	
Coenagrionidae			
Argia	7	p	
Coenagrionidae		p	
Plecoptera			
Nemouridae			
Malenka	2	sh	
Trichoptera			
Hydropsychidae			
Hydropsyche	4	cf	
Hydroptilidae			
Hydroptila	6	ph	
Lepidostomatidae			
Lepidostoma	1	sh	
Arachnoidea			
Acari			
Arrenuridae			
Arrenurus	5	p	
Lebertiidae			
Lebertia	8	p	
Sperchontidae			
Sperchon	8	p	
Malacostraca			
Amphipoda			
Anisogammaridae			
Ramellogammarus	6	cg	
Corophiidae			
Americorophium spinicorne	4	cf	
Crangonyctidae			
Crangonyx	4	cg	
Hyalellidae			
Hyalella	8	cg	
Isopoda			
Sphaeromatidae			
Sphaeromatidae		cg	
Ostracoda			
Ostracoda	8	cg	
Annelida			
Hirudinea			
Arhynchobdellida			
Erpobdellidae			
Erpobdellidae	8	p	
Rhyncobdellida			
Glossiphoniidae			

Helobdella	6	pa
Placobdella	6	pa
Oligochaeta		
Oligochaeta	5	cg
Lumbricida		
Megadrili		cg
Polychaeta		
Polychaeta		cf
Coelenterata		
Hydrozoa		
Hydroida		
Hydridae		
Hydra	5	p
Mollusca		
Bivalvia		
Veneroida		
Sphaeriidae		
Pisidium	8	cf
Gastropoda		
Basommatophora		
Lymnaeidae		
Lymnaeidae	6	sc
Physidae		
Physa	8	sc
Planorbidae		
Gyraulus	8	sc
Helisoma	6	sc
Planorbidae	6	sc
Hypsogastropoda		
Hydrobiidae		
Hydrobiidae	8	sc
Nemertea		
Enopa		
Tertastemmatidae		
Prostoma	8	p
Platyhelminthes		
Turbellaria		
Turbellaria	4	p

1) California Tolerance Value (CTV) based on a scale of 0 (highly intolerant) to 10 (highly tolerant)
2) Abbreviations used in denoting functional feeding group (FFG) are as follows:
- cf = collector filterer
- cg = collector-gatherer
- mh = macrophyte herbivore
- om = omnivore
- p = predator
- pa = parasite
- ph = piercer herbivore
- sc = scraper
- sh = shredder

INDIVIDUAL METRICS AND CALCULATED B-IBI SCORES FOR SITES SAMPLED IN 2010

Watershed	Waterbody	Site	Date	EPT Metric	Cumulative EPT Score	Percent Non-Insect Taxa	Non-Insect Taxa Score	Diptera Taxa Metric	Diptera Taxa Score	Predator Taxa Metric	Predator Taxa Score	Percent Collector-Gatherers	Percent Collector-Filterers	Percent Collectors Score	Total IBI Score
Alhambra	Alhambra Creek	ALH110	6/16/2010	2	2	50%	4	7	10	8	8	78%	3%	8	**32**
Cerrito	Cerrito Creek	CER010	6/23/2010	2	2	50%	4	5	8	4	4	76%	19%	2	**20**
Cerrito	Cerrito Creek	CER040	6/23/2010	3	3	27%	8	10	10	9	9	43%	14%	10	**40**
Marsh	Lower Marsh Creek	MSH052	6/20/2010	3	3	50%	4	5	8	4	4	82%	3%	7	**26**
Marsh	Lower Marsh Creek	MSH061	6/20/2010	0	0	56%	2	6	10	5	5	42%	2%	10	**27**
Refugio	Refugio Creek	RFG040	6/28/2010	1	1	44%	5	7	10	5	5	86%	11%	1	**22**
San Leandro	Moraga Creek	SLE208	6/19/2010	2	2	33%	7	10	10	9	9	67%	23%	4	**32**
San Pablo	San Pablo Creek	SPA175	6/27/2010	4	4	33%	7	8	10	4	4	81%	5%	6	**31**
San Pablo	San Pablo Creek	SPA190	6/19/2010	5	5	45%	4	6	10	5	5	86%	5%	4	**28**
Las Trampas (Walnut)	Las Trampas Creek	WAL365	6/26/2010	3	3	22%	9	9	10	6	6	61%	19%	9	**37**
Las Trampas (Walnut)	Las Trampas Creek	WAL375	6/26/2010	2	2	53%	3	5	8	6	6	84%	9%	3	**22**
Las Trampas (Walnut)	Las Trampas Creek	WAL410	6/21/2010	2	2	35%	6	8	10	6	6	80%	2%	8	**32**

Note: See Table 5 in report for method for conversion of raw metrics to scores.

APPENDIX H – DESCRIPTIVE STATISTICS FOR SITES MONITORED IN 2001-2010

Stream	ID	First Year Sampled	Last Year Sampled	# Years Sampled	Minimum IBI	Maximum IBI	Mean IBI	Median IBI
Alhambra Creek	ALH020	2001	2007	5	12	25	18.4	16
Alhambra Creek	ALH030	2001	2001	1	41	41	41	41
Alhambra Creek	ALH040	2001	2001	1	31	31	31	31
Alhambra Creek	ALH050	2005	2008	4	13	28	20.3	20
Alhambra Creek	ALH060	2002	2003	2	15	17	16	16
Franklin Creek	ALH070	2001	2001	1	25	25	25	25
Franklin Creek	ALH080	2002	2007	5	21	32	25.8	23
Franklin Creek	ALH087	2008	2008	1	26	26	26	26
Franklin Creek	ALH090	2001	2006	5	26	40	34.8	36
Franklin Creek	ALH100	2002	2002	1	26	26	26	26
Alhambra Creek	ALH110	2001	2010	4	14	44	26	23
Alhambra Creek	ALH130	2001	2009	3	23	33	26.3	23
Arroyo del Hambre	ALH140	2001	2008	7	15	34	25.9	24
Arroyo del Hambre	ALH150	2001	2009	2	19	39	29	29
Arroyo del Hambre	ALH160	2002	2007	5	30	46	34.2	31
Alhambra Creek	ALH170	2001	2008	6	20	39	28.2	25
Baxter Creek	BAX030	2006	2009	4	10	28	21.8	24.5
Baxter Creek	BAX045	2005	2008	4	8	22	17	19
Cerrito Creek	CER010	2006	2010	5	7	20	14	16
Cerrito Creek	CER020	2006	2008	2	20	21	20.5	20.5
Cerrito Creek	CER040	2002	2010	7	11	40	22.7	19
E Antioch Creek	EAN020	2006	2007	2	15	33	24	24
E Antioch Creek	EAN030	2006	2007	2	10	27	18.5	18.5
E Antioch Creek	EAN050	2006	2006	1	4	4	4	4
E Antioch Creek	EAN052	2007	2007	1	20	20	20	20
E Antioch Creek	EAN065	2006	2007	2	1	18	9.5	9.5
E Antioch Creek	EAN066	2006	2007	2	2	12	7	7
Grayson Creek	WAL030	2005	2006	2	4	6	5.0	5

Grayson Creek	WAL050	2005	2006	2	6	12	9	9
Grayson Creek	WAL070	2005	2006	2	3	7	5	5
Grayson Creek	WAL080	2005	2006	2	9	11	10	10
Grayson Creek	WAL090	2005	2006	2	18	19	18.5	18.5
Murderer's Creek	WAL100	2005	2006	2	14	15	14.5	14.5
Middle Fork Murderer's Creek	WAL110	2005	2006	2	6	9	7.5	7.5
North Fork Murderer's Creek	WAL120	2005	2006	2	6	11	8.5	8.5
North Fork Murderer's Creek	WAL130	2005	2006	2	8	15	11.5	11.5
Kellogg Creek	KEL010	2002	2002	1	46	46	46	46
Mallory Creek	KEL020	2002	2003	2	36	46	41	41
Mallory Creek	KEL030	2002	2003	2	48	48	48	48
Kellogg Creek	KEL040	2002	2002	1	39	39	39	39
Kirker Creek	KIR040	2005	2007	3	7	19	14.7	18
Kirker Creek	KIR085	2006	2007	2	10	16	13	13
Kirker Creek	KIR095	2006	2006	1	14	14	14	14
Kirker Creek	KIR110	2005	2007	3	12	18	14.3	13
Kirker Creek	KIR115	2005	2008	4	9	31	20.5	21
Las Trampas Creek	WAL300	2003	2007	3	12	26	17	13
Reliez Creek	WAL310	2003	2004	2	18	23	20.5	20.5
Reliez Creek	WAL320	2003	2004	2	15	24	19.5	19.5
Reliez Creek	WAL330	2003	2007	3	30	38	35.3	38
Las Trampas Creek	WAL340	2003	2007	3	13	26	17.3	13
Happy Valley Creek	WAL350	2003	2007	3	21	25	22.7	22
Lafayette Creek	WAL360	2003	2007	3	16	29	21.3	19
Lafayette Creek	WAL365	2008	2010	3	25	37	30.3	29
Las Trampas Creek	WAL375	2008	2010	3	20	25	22.3	22
Las Trampas Creek	WAL380	2003	2007	3	15	26	20	19
Las Trampas Creek	WAL390	2003	2004	2	8	24	16	16
Grizzly Creek	WAL400	2003	2004	2	12	20	16	16
Las Trampas Creek	WAL410	2003	2010	3	16	32	25.3	28
Las Trampas Creek	WAL420	2003	2007	3	45	50	47.7	48

Lower Marsh Creek	MSH010	2004	2007	4	5	28	14.8	13
Lower Marsh Creek	MSH020	2004	2005	2	12	14	13	13
Lower Marsh Creek	MSH030	2004	2005	2	11	18	14.5	14.5
Lower Marsh Creek	MSH045	2008	2009	2	17	18	17.5	17.5
Lower Marsh Creek	MSH050	2004	2006	3	7	15	11.3	12
Lower Marsh Creek	MSH052	2008	2010	3	18	31	25	26
Lower Marsh Creek	MSH060	2004	2005	2	15	18	16.5	16.5
Lower Marsh Creek	MSH061	2008	2010	3	7	27	18.7	22
Lower Marsh Creek	MSH070	2004	2008	3	14	26	20.3	21
Lower Marsh Creek	MSH090	2004	2007	4	23	36	30.5	31.5
Lower Marsh Creek	MSH110	2004	2005	2	38	41	39.5	39.5
Lower Marsh Creek	MSH120	2004	2005	2	32	33	32.5	32.5
Lower Marsh Creek	MSH130	2004	2009	6	28	45	35.3	33
Lower Marsh Creek	MSH140	2004	2009	6	37	49	44.7	46
Curry Creek	MSH150	2002	2006	4	36	48	43.5	45
Upper Marsh Creek	MSH160	2002	2005	3	46	50	48.3	49
Upper Marsh Creek	MSH170	2002	2003	2	47	50	48.5	48.5
Upper Marsh Creek	MSH180	2002	2006	4	41	45	42.8	42.5
Mt. Diablo Creek	MTD010	2005	2006	2	11	14	12.5	12.5
Mt. Diablo Creek	MTD020	2005	2009	5	12	24	17.6	18
Mt. Diablo Creek	MTD050	2005	2007	3	14	31	19.7	14
Mt. Diablo Creek	MTD060	2005	2009	5	8	36	21.4	21
Mitchell Creek	MTD100	2005	2006	2	29	40	34.5	34.5
Mitchell Creek	MTD120	2005	2006	2	41	50	45.5	45.5
Pine Creek	WAL200	2008	2009	2	25	27	26	26
Gallindo Creek	WAL220	2008	2009	2	18	21	19.5	19.5
Little Pine Creek	WAL290	2008	2009	2	44	46	45	45
Pinole Creek	PNL010	2002	2009	6	12	35	20	19
Pinole Creek	PNL020	2002	2003	2	10	11	10.5	10.5
Pinole Creek	PNL029	2008	2009	2	20	24	22	22
Pinole Creek	PNL030	2002	2003	2	10	15	12.5	12.5
Pinole Creek	PNL040	2002	2007	5	11	28	18.4	14

Pinole Creek	PNL050	2002	2003	2	19	22	20.5	20.5
Simas Creek	PNL060	2002	2006	4	21	33	25.3	23.5
Pinole Creek	PNL070	2002	2007	5	20	37	25.2	23
Pinole Creek	PNL090	2002	2003	2	22	28	25	25
Periera Creek	PNL100	2002	2009	7	22	41	30.6	32
Pinole Creek	PNL110	2002	2009	7	21	40	29.7	29
No Name Creek	PNL120	2002	2003	2	20	30	25	25
Rodeo Creek	RDO009	2009	2009	1	32	32	32	32
Rodeo Creek	RDO010	2004	2005	2	13	19	16	16
Unnamed Trib	RDO040	2004	2005	2	23	29	26	26
Rodeo Creek	RDO050	2004	2005	2	23	31	27	27
N. Fk. Rodeo Creek	RDO060	2004	2005	2	24	31	27.5	27.5
Rodeo Creek	RDO070	2004	2005	2	26	37	31.5	31.5
Refugio Creek	RFG010	2004	2005	2	9	11	10	10
Refugio Creek	RFG030	2004	2005	2	13	18	15.5	15.5
Refugio Creek	RFG040	2004	2010	3	14	22	16.7	14
Refugio Creek	RFG050	2004	2005	2	19	25	22	22
Refugio Creek	RFG060	2004	2005	2	16	21	18.5	18.5
Rheem Creek	RHM005	2006	2008	3	15	27	21	21
Rheem Creek	RHM010	2006	2007	2	8	16	12	12
Rheem Creek	RHM020	2006	2007	2	14	28	21	21
Rheem Creek	RHM030	2006	2009	4	16	40	23.3	18.5
Moraga Creek	SLE208	2009	2010	2	24	32	28	28
San Pablo Creek	SPA020	2005	2007	3	11	27	19.7	21
San Pablo Creek	SPA070	2005	2008	4	15	39	23	19
Wilkie Creek	SPA110	2005	2009	5	13	35	25.8	25
San Pablo Creek	SPA124	2005	2008	4	13	27	19.5	19
Castro Creek	SPA130	2005	2009	5	15	37	25.8	26
Oak Creek	SPA132	2006	2006	1	5	5	5	5
Castro Creek	SPA133	2008	2009	2	25	26	25.5	25.5
San Pablo Creek	SPA134	2005	2008	4	15	32	26	28.5

San Pablo Creek	SPA175	2008	2010	3	20	33	28	31
San Pablo Creek	SPA190	2008	2010	3	28	30	28.7	28
San Pablo Creek	SPA240	2006	2009	4	10	32	25.8	30.5
San Ramon Creek	WAL500	2007	2009	3	23	28	26	27
San Ramon Creek	WAL520	2007	2008	2	22	24	23	23
San Ramon Creek	WAL670	2007	2008	2	20	25	22.5	22.5
San Ramon Creek	WAL700	2007	2008	2	24	26	25	25
Bollinger Creek	WAL730	2007	2009	3	31	49	42.3	47
Bollinger Creek	WAL750	2007	2008	2	50	50	50	50
Markley Creek	WAN050	2006	2006	1	18	18	18	18
W Antioch Creek	WAN060	2006	2007	2	13	18	15.5	15.5
W Antioch Creek	WAN080	2006	2008	3	11	15	13.3	14
Wildcat Creek	WIL030	2005	2008	4	16	19	17.8	18
Wildcat Creek	WIL050	2005	2007	3	21	27	23.3	22
Wildcat Creek	WIL058	2005	2006	2	13	29	21	21
Wildcat Creek	WIL060	2006	2009	3	18	40	28.3	27
Wildcat Creek	WIL070	2005	2009	5	36	43	40.2	40
Wildcat Creek	WIL130	2005	2009	4	25	33	30.3	31.5
Wildcat Creek	WIL180	2005	2009	4	20	50	40.3	45.5
Total # Sites:	141		Total # samples:	406				

Attachment 11.1
FY 2010/11 Mercury Collection

2010/11	C O U N T S			Unit	Total	Conversion	Total Hg	
	Central San	West Cty	Delta Diablo	Measurement		Factor	Weight/lbs.	
Thermostats/3 grams per unit	121.0	159.0	0.0	ea	280.0	3.0	1.85	[1]
Thermometers/1 gram per unit	1,884.0	2,112.0	0.0	ea	3,996.0	1.0	8.79	[1]
Elemental Hg	65.3	96.0	0.0	lbs.	161.3		161.30	
Switches/lbs.	6.1	0.0	10.0	lbs.	16.1		16.10	
Mercury Batteries/3,125 mg/250 batteries(12.5 mg per)	125.0	0.0	0.0	lbs.	125.0	3,125.0	0.86	[2]
Fluorescent Lamps/5.7 mg/ft	283,137.0	67,509.0	16,547.0	ft.	367,193.0	5.7	4.60	[2]
Thermometers Exchanged/1 gram per unit	78.0	38.0	0.0	ea.	116.0	1.0	0.26	[1]
Miscellaneous mercury containing devices (lbs.)[4]	36.9	17.3	2,082.0 [3]	lbs.	2,136.2		NA	
							193.76	

[1] Conversion for 1 gram to 1 pound = 0.0022

[2] Conversion for 1 milligram to 1 pound = 0.0000022

[3] Weight includes drums; therefore amount of mercury is indeterminable and not included in totals

[4] Weight of mercury is indeterminable because no conversion possible for unknown items