

**COPERMITTEES-ONLY REGIONAL MONITORING WORKGROUP – MEETING SUMMARY**

County of San Diego – 5201 Ruffin Road, Ste P, San Diego, CA 92123

Tuesday, April 29, 2008

10:00am – 12:00pm

Attendees:

<b>Name</b>	<b>Organization</b>
Jo Ann Weber	County of San Diego
Todd Snyder	County of San Diego
David Renfrew	Weston Solutions
Annie Hill	SDCRAA
Pat Ryan	City of Poway
John Quenzer	City of National City (D-Max)
Kenneth St. Clair	City of San Marcos
Mo Lahsaie	City of Oceanside
Eric Steenblock	City of Encinitas
Crystal Najera	City of Encinitas
Mayela Padilla	City of Encinitas
Paul Hartman	City of Carlsbad
Phil Gibbons	Port of San Diego
Andre Sonksen	City of San Diego
Helen Perry	City of Santee
Rosanna Lacarra	City of Del Mar (PBS&J)
Khosro Aminpour	City of Chula Vista
Marisa Fontanoz	City of Chula Vista

**PERIPHYTON TAXONOMY**

**BACKGROUND:** The state of CA is moving quickly to develop a periphyton (algal) index. Periphyton is a good indicator of eutrophication and nutrient enrichment. Our regional monitoring program does include a periphyton assessment, but it is a general survey and does not include periphyton taxonomy. The RWQCB has requested that we consider expanding our program this spring to include periphyton taxonomy so that our data can be included in the development of the periphyton index (it is suspected that we will receive an Order to include this in future surveys). In order that our unique environmental conditions in San Diego County will be considered in the index development, extra funding for this survey from the County of San Diego has been secured. There will be no costs to Copermitees. A SCCWRP subcontractor will conduct the surveys.

The County requested input from the workgroup regarding the sites chosen for periphyton taxonomy analysis. The County is working with the RWQCB and SCCWRP on this special study that will focus mostly on the northern watersheds (18 north county sites + 1 in Chollas). By providing data, the San Diego Copermitees can influence the process and make sure that the final index includes local conditions. Monitoring will mostly likely be done in May. The County of San Diego will directly submit the results to the RWQCB and the results will not be included in the Copermitees Regional Monitoring Report.

**SOURCE IDENTIFICATION MONITORING PROGRAM**

Comments on the Source ID Monitoring Program Workplan, dated April 2008, are due on 05/30 (Note: This will be extended until June 11<sup>th</sup> to allow time for review of the Source ID Pilot Project). The program is due to the RWQCB by July 1, 2008. The group discussed three general approaches to the program:

1. Dry weather data evaluation (priority list of source ID studies)
2. Proposed pilot source ID study (< \$50K)
3. Pollutant – source study

After discussion, the group decided that a combination of a pilot study and the pollutant – source approach would best meet permit requirements. The permit states: “The monitoring program shall include focused monitoring which moves upstream into each watershed as necessary to identify sources. The monitoring program shall use source inventories and “Threat to Water Quality” analysis to guide monitoring efforts. The monitoring program shall be implemented within each watershed and shall begin no later than the 2008-2009 monitoring year.”

The Copermittees reached consensus on conducting a pilot project in one watershed in a residential land-use area. Because all of the nine watershed management areas have residential use, the results of the pilot study could be applied to other watersheds. Additionally, research in this topic is useful due to updates to water conservation ordinances (over-irrigation as a source). The group decided to talk about possible source ID studies at the next Regional Monitoring Workgroup meeting on May 20<sup>th</sup>.

Copermittees were also requested to submit any studies within their jurisdictions/watersheds being conducted that we could use as leverage with the current or future source ID program by June 1. A template table was already distributed by e-mail. Projects could include grants and third party studies, as well as jurisdictional studies.

#### **MS4 OUTFALL PROGRAM**

For the random MS4 Outfall program, please submit a list of outfalls greater than or equal to 36 inches to the County by June 2, 2008. A spreadsheet with the requested information was provided to the group by email. (Note: Please include outfalls to the Pacific Ocean)

#### **BIGHT 08 – APPROVAL of TASK 3.4 of WORKPLAN**

This applies to the Main Coastal Ecology Work Plan for Bight 08 and the comparison of past ABLM data with Sediment Quality Objectives (SQOs). Due to time constraints and because this was not a critical path item, the group decided to table the vote on this task until the May 20<sup>th</sup> Regional Monitoring Workgroup.

#### **WESTON CONTRACT UPDATE**

The County provided an annual estimate of funds anticipated to be in Weston’s regional monitoring contract and compared it to the timeline of the Permit and the anticipated deliverables. The group concurred that Weston was providing good service and that option year 3 for July 1, 2009- June 30, 2010 should be granted. Because the contract could be short of funds in the last year of the contract, the Copermittees agreed to revisit the issue in 1 year. The County indicated that a lead-time of about one year was necessary to complete the required bidding process for this contract.

#### **EUTROPHICATION STUDY**

A work plan has not been completed, as the amount of funds for the study has not been finalized. There is an item on the State Board’s June 2008 agenda to provide approximately \$500,000 to this study. Please see the attached eutrophication study information sheet that highlights the importance of this work to the RWQCB. The group agreed to provide the 2007-2008 ABLM funds to support the eutrophication work even though a work plan is not yet available. At this point, it would not be useful to the Copermittees’ to conduct the ABLM scope

proposed in our Scope of Work submitted on August 30, 2007, as it overlaps with the proposed Bight 08 study that is scheduled to be conducted this summer.

### **SCCWRP PRESENTATION**

Ken Schiff from SCCWRP presented to the group some information about approaches to Source ID Studies and also discussed the Sediment Quality Objectives. **Please see attached powerpoint presentation.**

### **FUTURE MEETINGS**

The next Regional Monitoring Workgroup meeting is scheduled for **Tuesday, May 20 from 10am to 12pm** at the County of San Diego at 5201 Ruffin Road, Suite P San Diego, CA 92123.

Upcoming meetings are as follows:

Tuesday, June 24, 10am-12pm (Tentatively: Weston will present on SQOs)

Tuesday, July 22, 10am-12pm

Tuesday, August 26, 10am-12pm

**AGENDA – COPERMITTEES-ONLY MEETING**  
**San Diego Regional Monitoring Workgroup**  
**County of San Diego – 5201 Ruffin Rd., Ste P, San Diego, CA 92123**  
**Tuesday, April 29, 2008**  
**10:00 AM – 12:00 PM**

1. Introductions
2. Regulatory or Other Requests – Detailed periphyton taxonomy at 19 sites in San Diego (County of San Diego)
3. Draft Source Identification Monitoring Program – Comments due to County of San Diego on May 30, 2008. Request further direction on our proposed program for 2008-2009. Currently, we propose evaluating historical dry weather data and using factors proposed in the SMC Model Stormwater Monitoring Guidance as well as collaboration with the WURMP Workgroup prepare a prioritization list of future Source ID Studies.
4. Other items due: Source ID Table: Due to County June 1, 2008 - to identify studies conducted outside of the regional monitoring program that could be leverage to help us comply with the Source ID Monitoring requirement of our Permit.  
Random MS4s Outfall Monitoring Locations: Due to County on May 15, 2008. As part of the MS4s Outfall Monitoring Program, we are proposing a random program (6 outfalls for wet and dry per year per watershed to be done by regional contractor) of monitoring of 36" or greater MS4s outfalls.
5. **Vote\*\*\*** Approval of Task 3.4 in Bight 08 Monitoring Plan\*\*\*- Main Coastal Ecology Work Plan for Bight 08 (sent out March 27, 2008); Do we authorize Weston to compare ambient bay & lagoon data with the new sediment quality objectives (cost is \$ 8,595)?\*\*\* **(Vote will not be before 10:30 am)**. Background: The new sediment quality objectives will be used to list waterbodies on the 303(d) list. This analysis will provide the information to us in advance so that watersheds can plan for future studies if affected by these new standards.
6. **Vote\*\*\***Do we extend Weston's contract as regional contractor into Option Year One (July 1, 2009 to June 30, 2010)? \*\*\* **(Vote will not be before 10:30 am)** Background: The County needs one year of lead time to solicit and award a new contract for regional monitoring. Weston's contract is for 3 years and 2 one-year options. The Weston contract began July 1, 2006. We will discuss timing of the contract with permit requirements and if the capacity of the contract (10.5 million) will be adequate for up to 5 years.
7. Update on trade-off of 07-08 ABLM program for eutrophication study in wetlands to better understand endpoints that are applicable to TMDLS- (I will request a written update from Lilian Busse of the RWQCB)

Background: Attached is more detail on the Eutrophication Study of Lagoons (part of Bight 08) that the RWQCB proposes to conduct and supplement their funds with our 2007-2008 ABLM Program funds (approx 144 K). The Regional Monitoring Workgroup voted in January to approve substituting this program for the 2007-2008 ABLM Program pending approval of sample locations/work plan. However, the work plan will not be prepared until after the final funding amount is known (this will not be until after June 2008). We would conduct the 2007-2008 ABLM program in Summer 2008. However, the program proposed in our Sept 2007 scope of work is redundant with the Bight 08 Program that we developed with other stakeholder during the winter of 2008.

The SDRWQCB will use our funds/services in-kind for San Diego lagoons (as they can not spend any money outside of their region). I recommend that we commit our funds to this regional program, as it will give us a seat at the table in the development of the nutrient criteria for lagoons that will be used in future TMDL development. This will allow us to leverage our resources with those of the RWQCB to increase the scientific basis of the criteria. If the SDRWQCB receives the SEP funding of 500 K, they will conduct the study in all San Diego lagoons. The funds are part of the Regional Monitoring Program and use of these funds will keep us in compliance with Order 2007-0001.

8. Ken Schiff of SCCWRP (begin 11 to 11:15 am) will discuss the following topics: Bight 08 – progress and update; proposed wetlands study to study eutrophic conditions; Sediment Quality Objectives (importance and anticipated application/impact); SMC- role and importance to NPDES Permit holders. Source ID Studies (examples).
9. Other Items (please bring to meeting)
10. Future Meetings - The following meetings are at the County of San Diego, Location will be 5201 Ruffin Rd, Ste. P, San Diego, CA 92123

Tuesday, May 20, 10 am to Noon

Tuesday, June 24, 10 am to Noon

**For updated meeting schedule, agendas and meeting summaries visit**  
**[www.projectcleanwater.org](http://www.projectcleanwater.org)**

*Agenda Item #2*

## Weber, Jo Ann

---

**From:** Weber, Jo Ann  
**Sent:** Friday, April 18, 2008 9:17 AM  
**To:** 'kaminpour@ci.chula-vista.ca.us'; 'kstclair@ci.san-marcos.ca.us'; 'dbechter@ci.poway.ca.us'; 'ddaneshfar@ci.national-city.ca.us'; 'ddavies@ci.el-cajon.ca.us'; 'bgriswold@ci.el-cajon.ca.us'; 'kholman@portofsandiego.org'; 'shuth@coronado.ca.us'; 'jstrommer@ci.vista.ca.us'; 'rkolb@sandiego.gov'; 'RMLacarra@pbsj.com'; 'eluke@ci.carlsbad.ca.us'; 'dking@cosb.org'; 'cfilar@ci.escondido.ca.us'; 'rgilb@san.org'; 'mlahsaie@ci.oceanside.ca.us'; 'hlevien@cityofib.org'; 'mtamimi@ci.la-mesa.ca.us'; 'clong@ci.lemon-grove.ca.us'; 'hwilliams@ci.san-marcos.ca.us'; 'HPerry@ci.santee.ca.us'; 'arsalan@dmaxinc.com'; 'jquenzer@dmaxinc.com'; 'rmiller@ci.poway.ca.us'; 'jcampos@ci.el-cajon.ca.us'; 'kgoodell@ci.oceanside.ca.us'; 'Ahart@ci.carlsbad.ca.us'; 'pryan@ci.poway.ca.us'; 'asonksen@sandiego.gov'; 'AWitheridge@ci.oceanside.ca.us'; 'JKeir@CityofIB.org'; 'MPadilla@ci.encinitas.ca.us'; 'DCoppi@CityofIB.org'; 'esteenblock@ci.encinitas.ca.us'; 'pgibbons@portofsandiego.org'; 'cdnajera@pbsj.com'; 'upanganiban@sandiego.gov'; 'sbauer@portofsandiego.org'; 'mfontanoz@ci.chula-vista.ca.us'; 'jdestefano@delmar.ca.us'  
**Cc:** VanRhyn, Jon; Weber, Jo Ann; Snyder, Todd; 'Renfrew, Dave'; Kay, Lisa Marie  
**Subject:** Detailed Periphyton Assessment at 19 sites in San Diego County - For your review and comment by May 2, 2008

Dear Copermittees, The state of California is moving quickly to develop a periphyton (algal) index. Periphyton is a good indicator of eutrophication and nutrient enrichment. Our regional monitoring program does include a periphyton assessment, but it is a general survey and does not include periphyton taxonomy.

The RWQCB has requested that we consider expanding our program this spring to include periphyton taxonomy so that our data can be included in the development of the periphyton index (I suspect we will receive an Order to include this in future surveys). In order that our unique environmental conditions in San Diego County will be considered in the index development, I have secured the extra funding for this survey from the County of San Diego. There will be no additional costs to Copermittees. A SCCWRP subcontractor will conduct the surveys. In my past experiences, I have found that if you provide data, you can influence the process and make sure that the final index has considered your local conditions.

In the Regional Program, we are scheduled to conduct bioassessment at 19 sites in mid-May. The sites are in the following watershed management areas: Santa Margarita (4 sites), San Luis Rey (3 sites), Carlsbad (5 sites), San Dieguito (3 sites), and Penasquitos (3 sites). I have assumed that the SCCWRP contractor will do these same 19 sites, however, at your request, I can modify the location of the sites for detailed periphyton taxonomy. Please respond if you wish to add or remove your watershed from consideration (or increase or reduce the number of sites).

If I have no responses by 3 pm on Friday May 2, I will assume the same site locations as in the Regional Monitoring Program. Please do contact me if you have questions or comments. Best regards, Jo Ann

Jo Ann Weber  
 Supervising Environmental Health Specialist  
 County of San Diego/DPW/Watershed Protection  
 5201 Ruffin Road, Suite P  
 San Diego, CA 92123, MS 0326  
 Tel: 858-495-5317  
 Fax: 858-495-5263  
 joann.weber@sdcounty.ca.gov

4/18/2008

## 2.4 Work Plan Development

COSD COMMENT: PLEASE REVIEW

*Details of the Source Identification Study will be submitted as part of the Scope of Work submitted to the RWQCB on September 1 of each year beginning in 2009 for the current monitoring year. For the 2008-2009 monitoring year, the jurisdictional dry weather data will be compiled and analyzed for each watershed. The Regional Monitoring Workgroup will work collaboratively with the WURMP Workgroup in the development of a list of potential source identification areas and will prioritize the list based on the guidance presented in the Model Monitoring Program. Additionally, the watershed priority problems in Table 2-1 developed by the WURMPs Workgroup and the leveraging with studies presented in Table 2-2 will be considered in the prioritization of potential source identification studies.*

## 3.0 ASSESSMENT AND REPORTING

### 3.1 Reporting

The Annual Regional Monitoring Report submitted January 31 will include a description of the source identification monitoring that was implemented in the past Permit year. To be reported are the locations, constituents sampled, the results of the sampling, and follow-up actions taken. Copermittees will consider the results of the studies in the implementation of their Jurisdictional Urban Runoff Management Programs and Watershed Urban Runoff Management Programs.

### 3.2 Program Review and Modification

As stated previously in this document, Order 2007-0001 provides the Copermittees flexibility to develop a workable source identification monitoring program. Specifically, section II.A.11 of the Permit Fact Sheet states:

*“Since a monitoring program for source identification is mostly new, the Copermittees are provided significant leeway in the development and implementation of the program. The Copermittees can utilize the flexibility incorporated into the monitoring and reporting program to develop program that is workable for them while providing the necessary information.”*

The program described in this document meets the Permit criteria for a source identification monitoring program. As stated previously in this program, the initial year of the program will focus on data analysis of historical dry weather data collected in the MS4s and on developing a list of potential source identification studies. The prioritization will include watershed priorities and leveraging resources with other watershed studies. Copermittees need to ensure that the data they collect can be directly related to making management decisions (such as site cleanups and improved BMPs) to water quality improvements.

The source identification studies are special studies, and therefore, by their nature are anticipated to be focused studies of relatively short duration that will be targeted to answer specific





## Agenda Item #5

VOTING ITEM: SECTION 3.4- DO we conduct comparison? (\$8,595 of Regional Monitoring funds- no new funds)

### 3.4 Historical Data SQO Comparison

**Jo Ann's Note: This section will not be submitted to the RWQCB as part of the work plan, but is for Copermittee discussion**

The SWRCB recently adopted the Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality (SWRCB Resolution 2008-0014). This plan specifies that *“The Sediment Quality Objectives (SQOs) and supporting tools shall be utilized to assess ambient sediment quality.”* The plan further states *“Part 1 supersedes all applicable narrative water quality objectives and related implementation provisions in water quality control plans (basin plans) to the extent that the objectives and provisions are applied to protect bay or estuarine benthic communities from toxic pollutants in sediments.”*

The SQO guidance reports that the water segments listed as not achieving the protective beneficial use condition (unimpacted and likely unimpacted) shall be placed on the section 303(d) list for exceedance of the narrative sediment quality objective for aquatic life protection if the number of stations designated as not achieving the protective condition.

San Diego's existing lagoon data from the ABLM program will be used to calculate the indices for comparing the new SQOs adopted on February 19, 2008. The purpose of this evaluation will be to determine the drivers of the sediment quality assessment results in San Diego Lagoons. Results will be presented to the Copermittees for the purposes of determining whether management actions are needed for future planning purposes.

- 1) Based on the benthic population data, the whole sediment chemistry, and toxicity, how will San Diego Lagoon sediments be characterized under the California State SQO?
- 2) Using historical data which lagoons are likely to be characterized as clearly impacted, likely impacted, possibly impacted, or unimpacted?
- 3) Do confounding factors need to be considered with the findings of the SQO comparison for San Diego's Lagoons?

Agenda Item # 6

San Diego Municipal Stormwater Copermittees			
Regional Monitoring Contract - Timing with Permit Cycle and Estimated Capacity Issues			
Weston Contract Term	Monitoring Year in Permit No. 2007-0001 Jan 24, 2006 to Jan 24, 2011	\$ Invoiced	\$ Remaining
July 1-2006 to June 30, 2007	Old Permit	1,046,818	6,453,182
July 1, 2007 to June 30, 2008	Yr 1	1,500,000	4,953,182
July 1, 2008 to June 30, 2009	Yr 2	1,725,539	3,227,643
<b>Opt yr 1: July 1, 2009 to June 30, 2010</b>	<b>Yr 3</b>	<b>2,000,000</b>	<b>1,227,643</b>
Opt yr 2: July 1, 2010 to June 30, 2011	Yr 4 - ROWD Yr 5	2,000,000	-772,357
Projected contract amounts are in italics			
Recommend bidding out Regional Monitoring Contract in Yr 3 of permit or during July 1, 2009 through June 30, 2010 With selected contractor beginning new contract on June 30, 2010 and will be able to begin work on the Monitoring portion of the ROWD.			

#7

**Eutrophication Study of Lagoons**  
**Proposed program to replace 2007-2008 Ambient Bay and Lagoon Program**

NOTE: All funds will be spent on San Diego lagoons- other funds will be used for lagoons outside of San Diego County. The RWQCB has requested an additional \$500,000 for San Diego lagoons that was approved by the SDRWQCB and will be on the State Board's agenda in June 2008. This study will not begin until after Jan. 2009. Therefore, the exact sample locations have not been determined at this time. The number of samples will depend on the level of funding. Because this study will impact the criteria used in the development of TMDLs for nutrients in lagoons, it would be to our benefit to be involved so that we can be involved in the development. Additionally, these funds are part of the Regional Monitoring Program- so there is no extra cost to Copermittes.

The purpose of the study is to capture the range in condition with respect to eutrophication (the biological response of nutrient overenrichment) among estuaries in the Southern California Bight. Give the large variability in the types of estuaries that we have in this region and limited funding for the study, an emphasis is being placed on trying to capture the variability among estuaries, rather than within an estuary. These data will improve our understanding of how estuarine characteristics such as depth, tidal forcing, freshwater residence time, etc. control the biological response of the estuary to nutrient loads. This will lead to more robust water quality criteria and improved TMDL tools (water quality models).

The goal of the Bight program is to assess differences among estuaries throughout southern California. Within an estuary, however, potentially large variations in nutrient concentrations and biological response may exist. Since insufficient effort exists to sample multiple locations in an estuary, the Bight program has moved towards an "index area" approach in order to minimize the within estuary variance (much like we use an index time period to minimize seasonal differences). The index area criteria for selecting sites include: 1) proximity to nutrient inputs; 2) maximum residence time of the estuarine water column; 3) field crew safety and access; and 4) adequacy for sampler deployment. This strategy removes potentially confounding factors between estuaries such as differential tidal exchange, secondary transport mechanisms, and lack of connectivity between inputs and biological responses. While the index area approach is admittedly not representative of an entire estuary, it is common to all estuaries (which is the goal). If potential problems are identified (or suspected) at an index area, then site specific enhancements are encouraged to assess the extent of the impact within the estuary.

Update on Bight 08

**Budget Estimates for the Bight 08 Coastal Ecology Main Group Workplan**

Date: 4/22/08

Coastal Ecology-Main Group Tasks	Estimated Cost	Description
Bight Planning Meetings/QC Workplan Development	\$ 29,826	\$17,000 was authorized for representing the Copermittees at the Bight 08 CE main group planning meetings. Additional hours (funds) are estimated for Subcommittee meetings (field, data, tox, taxonomy, lab), and for coordinating sampling within San Diego Lagoons for permitting issues (CDFG, USFWS, jurisdictions)
Field Sampling	\$ 75,133	Estimated costs for conducting sampling in 8 lagoons at 5 sites. Includes sample processing for benthos, tox, chemistry, and sampling logistics.
Weston Toxicity	\$ 101,242	Estimated costs for toxicity analyses for E. estuarius and Mytilus at 40 sites + 4 QC duplicates and up to 20 side by side tox tests using Leptochirus for fine grained sediments.
Weston Benthic-Infauna	\$ 103,840	Estimated costs for benthic sample processing, taxonomy, and taxonomy QC.
Sediment Chemistry	\$ 77,260	Estimated costs for Chemistry sample processing and Chemistry Report QC.
Sediment TIE Resample	\$ 10,569	Effort to conduct resample of sediment station in the event significant toxicity is observed in a sample.
Sediment TIE Tox	\$ 60,009	Estimate to conduct up to 2 amphipod toxicity identification evaluations and 2 mussel toxicity identification evaluations (if significant toxicity is observed). Sample sites will be prioritized based on level of toxicity if more than 2 sites exhibit toxicity.
Data Management, QC, and Reporting to SCCWRP	\$ 21,827	Data management and coordination of sample result transmittal to SCCWRP and data QC for all program tasks.
Optional Historical ABLM and Bight Data Review for SQO Comparisons	\$ 8,595	Assessment of existing data for comparison to the current SQO guidelines based on existing data. Data results will provide and understanding of the drivers of results in each lagoon evaluated.
<b>Total Estimated CE Main Group Cost</b>	<b>\$ 488,300</b>	<i>Weston's Budget for implementing the Bight 08 work plan</i>

Copermittee Bight 08 Budget

\$ 801,667

Coastal Wetlands Budget

\$ 143,544

Coastal Microbiology Budget

\$ 169,823

*from 2007-2008 ABLM Program*

## Source Tracking

Kenneth Schiff

Southern California Coastal Water Research Project

[www.sccwrp.org](http://www.sccwrp.org)

## Many Variables to Consider

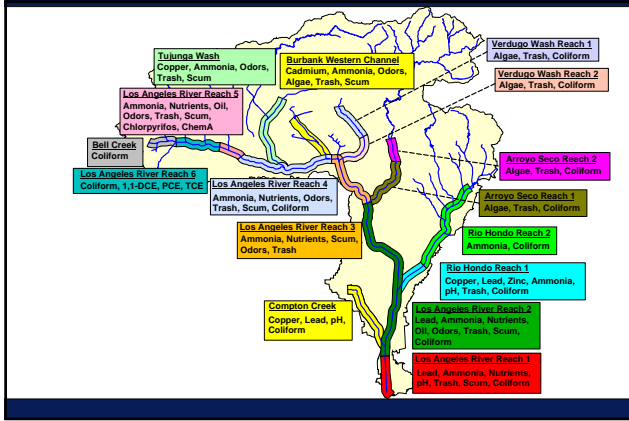
- Dry vs Wet
- Constituent specifics
- Level of detail
- Transport pathways
- Level of effort

## Several Approaches

- Sanitary survey
- Source specific markers
- Mass balance
- Forensic/exclusionary
- Modeling

## Three Examples

- LA River nutrients
- Ballona Creek bacteria
- Sediment toxicity



## Three Objectives for LA River

- Quantify sources of pollutants
- Improve problem characterization
  - Extent and magnitude of impairments
  - Linkage analysis
- Evaluate effectiveness and efficiency of various implementation scenarios
  - Model development

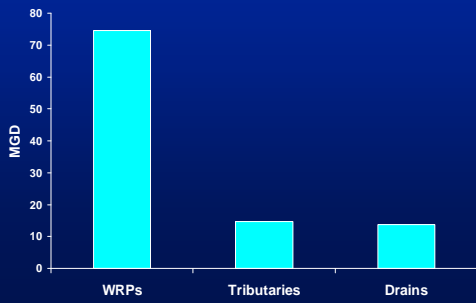
## Quantifying Sources

- Three Water Reclamation Plants (WRPs)
- More than 1,000 storm drains
  - Approximately 100-150 flow when its not raining
- 7 major tributaries
- Our goal was to sample every source all at the same time
  - Flow, Nutrients, Bacteria, Metals
  - Integrated professional/volunteer monitoring effort

Photos care of Target Science  
<http://www.lalc.k12.ca.us>

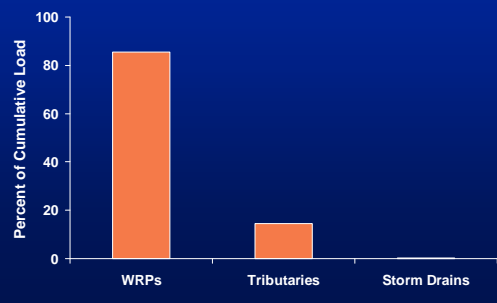
### Sources Of Flow

September 10, 2000



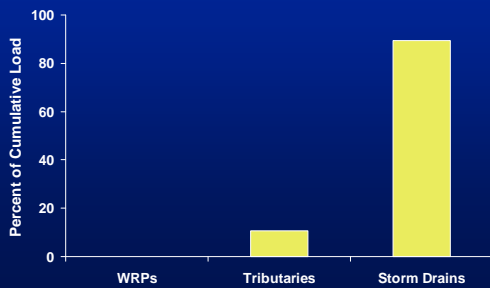
### Relative Ammonia Loading

September 10, 2000



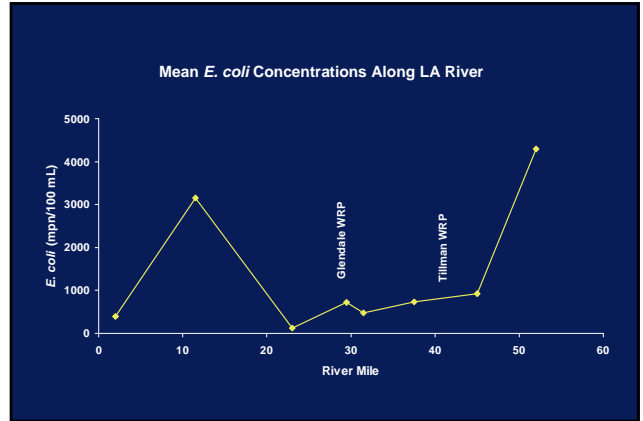
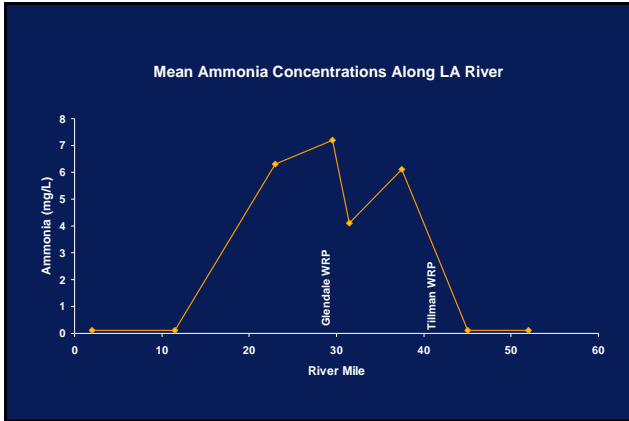
### Relative *E. coli* Loading

September 10, 2000



### Magnitude and Extent Of Impact

- Sampled 8 locations along the river mainstem - same time as source sampling
- WRP had a dramatic effect on in-river concentrations of nutrients
- Storm drains had a dramatic effect on in-river concentrations of bacteria



## LA River Conclusions

- Dry weather flow in the LA River is dominated by WRP effluent
- WRPs contribute the majority of nutrients to the LA River
- Urban runoff contributes the majority of the bacteria
- Concentrations in the river reflect emissions from WRPs and storm drains
- A small number of sources are responsible for most of the inputs

## Source Tracking In Ballona Creek

- **Not all indicator bacteria come from humans**
  - many inputs are episodic
- **Other source tracking tools are being developed**
  - Alternative methods for traditional indicators
  - Alternative bacterial indicators
  - Human specific virus
- **No tool is perfect**
  - intercalibration studies demonstrate potential bias

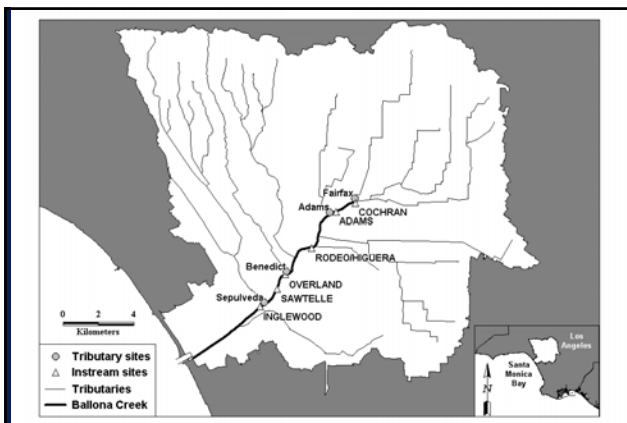


## Use a Tiered Approach

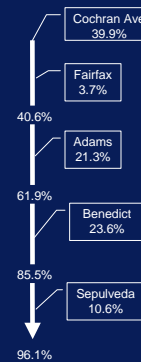
- **First Tier: traditional fecal indicator bacteria**
- **Second Tier: new source tracking tools**
  - polymerase chain reaction (PCR)
  - enterococcus, *Bacteroides*, human specific enterovirus
- **Third Tier: viral confirmation**

## Project Design

- **Apply source tracking in Ballona Creek**
  - largest watershed to Santa Monica Bay
- **Mass based approach**
  - Six sites along the main stem, Four major tributary inputs
- **Sample every six minutes**
  - Hourly composites for six hours
- **Measure flow, traditional fecal indicator bacteria, new tools**
  - subset of samples for viral confirmation

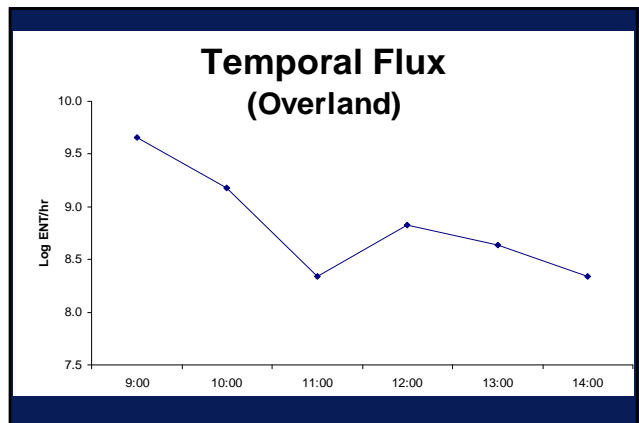
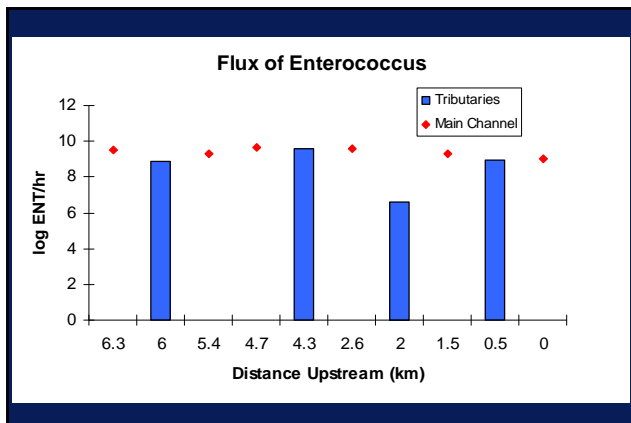
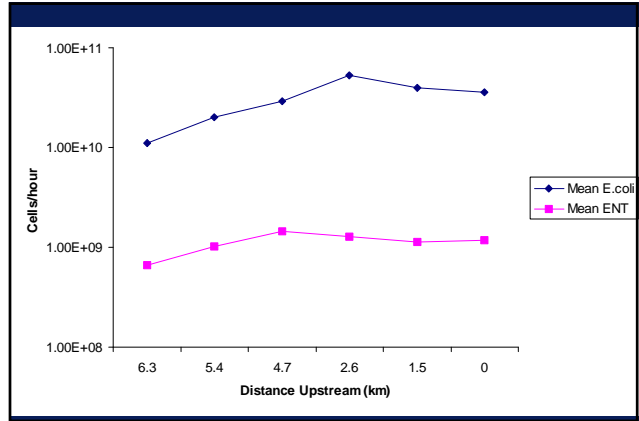


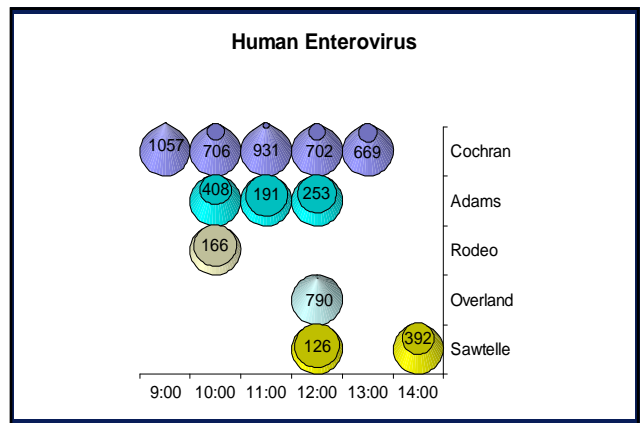
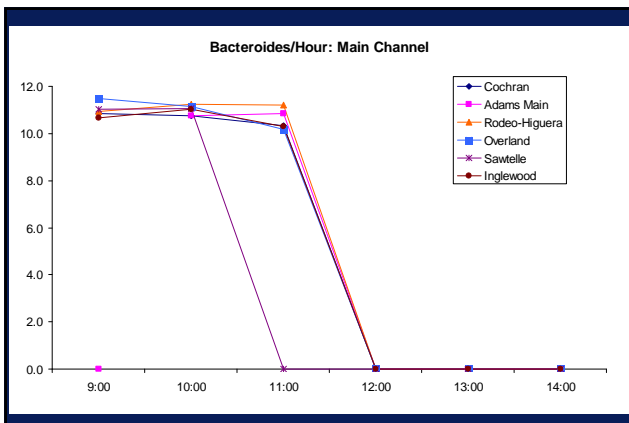
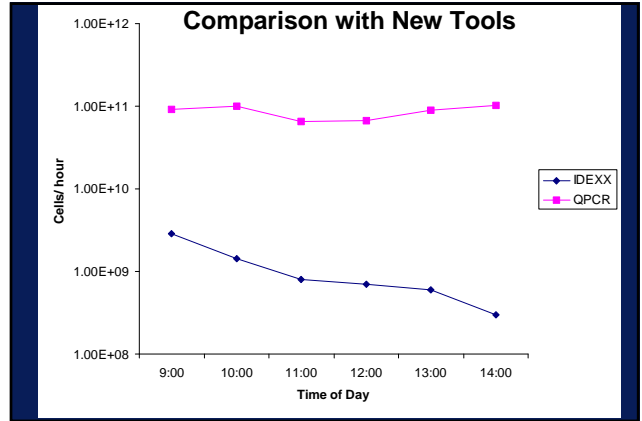
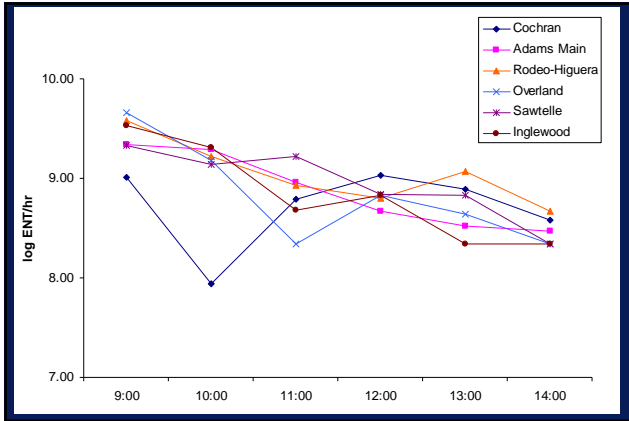
## Flow and Volume Balance In Ballona Creek



## Results

- Spatial flux estimates
- Temporal flux estimates
- New tools
  - virus confirmation





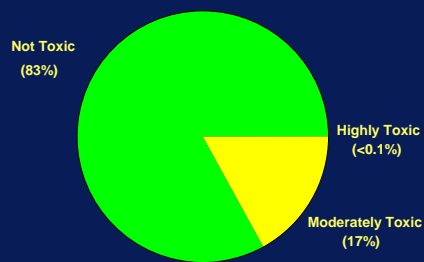
## Summary For Ballona Creek

- Ballona Ck is ubiquitously contaminated with fecal indicator bacteria
  - Flux as high at the head as the mouth
- Human sources of fecal pollution were found
  - *Bacteroides* and enterovirus measured at most upstream site
- New source tracking tools can help prioritize management actions
  - Without tools, entire watershed needs to be diverted
  - With tools, focus on the section upstream of Cochran

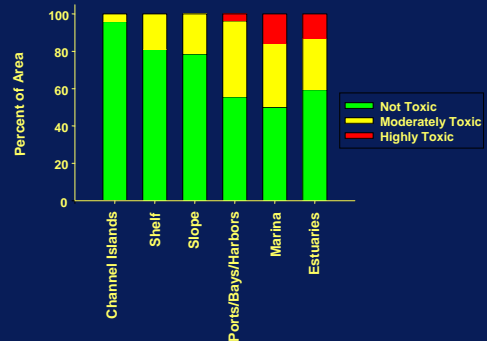
## Sediment Toxicity

- Toxicity is one of the harder source tracking components
  - unmeasured chemicals
- Sediments are especially difficult
  - toxicants always found in combination
- Sediment quality objectives and TMDLs mandate remediation

SEDIMENT TOXICITY ASSESSMENT FROM BIGHT'03  
% OF SCB



TOXICITY BY STRATA



## TOXICITY IDENTIFICATION EVALUATIONS (TIES)

- TIEs conducted at sites with high toxicity  
Ballona Creek and Dominguez Channel
- Analyzed bulk sediment and pore water
- Phase I toxicity characterization treatments  
Metals: ion exchange resin (or EDTA & sodium thiosulfate addition)  
Nonpolar organics: carbon addition (or solid phase extraction)  
Organophosphate/pyrethroid pesticides: PBO addition

## ESTUARY TIE RESULTS WHOLE SEDIMENT

Location	Carbon	Cation	PBO
Dominguez Channel	+	0	>
Ballona Creek	+	0+	>

+ = Highly effective (toxicity eliminated)    0 = Not effective (No change)  
 0+ = Slightly effective    > = Enhanced toxicity

- Carbon and PBO results consistent with a nonpolar organic toxicant, possibly pyrethroid pesticide

## ESTUARY TIE RESULTS WHOLE SEDIMENT

Location	Carbon	Cation	PBO
Dominguez Channel	+	0	>
Ballona Creek	+	0+	>

+ = Highly effective (toxicity eliminated)    0 = Not effective (No change)  
 0+ = Slightly effective    > = Enhanced toxicity

Carbon and PBO results consistent with a nonpolar organic toxicant, possibly pyrethroid pesticide

## There's No One Way For Source Tracking

- Several approaches
- Site and project specifics
- Multiple approaches and tools are most helpful



**Regional Monitoring Workgroup Meeting      April 29, 2008**

Last Name	First Name	Organization	E-mail	Phone Number
Weber	Tu Ann	County of San Diego	joann.weber@sdcounty.ca.gov	858-495-5317
Renfrew	David	Western Solutions, Inc.	dave.renfrew@westernsolutions.com	760-795-6903
Padilla	Mayela	City of Encinitas	mpadilla@ci.encinitas.ca.us	760 943 2125
Steenbeck	ERIK	City of Encinitas	esteenbeck@ci.encinitas.ca.us	760-943-2108
Najera	Crystal	City of Encinitas	cnajera@ci.encinitas.ca.us	760-943-2285
Hill	Annie	Airport Authority	AHill@san.oreg	619 400-2793
Snyder	Todd	County of San Diego	todd.snyder@sdcounty.ca.gov	858 694-3482
St. Clair	Ken	City of San Marcos	kstclair@ci.sanmarcos.ca.us	760 752-7550 x3397
Ryan	Rat	City of Poway	pryan@ci.poway.ca.us	858-668-4717
Gibbers	Phil	Part of San Diego	psibb@portofsandiego.org	619 295 6037
<del>La</del> Lahsair	MO	City of Oceanside	mlehsair@ci.oceanside.ca.us	760-435-5803
Quenzer	John	City of National City	jquenzer@dmxinc.com	(858) 586-6600
Hartman	Paul	City of Carlsbad	ahart@ci.carlsbad.ca.us	(760) 602-7586
AMINPOUR	KHORO	CITY OF CHULA VISTA	kaminpour@ci.chula-vista.ca.us	(619) 397-6111
FONTANAZ	MARISA	City of Chula Vista	mfontanaz@ci.chula-vista.ca.us	(619) 397-6134
LACARRA	ROSANNA	CITY OF DEL MAR (ABSENT)	RMLacarra@plbsj.com	(760) 479 2937
PEARZ	HELEN	CITY OF SANTEE	hpeary@ci.santee.ca.us	619 258 4100 x177
SOUKSEN	ANDRE	CITY OF SAN DIEGO	ASouksen@SANDIEGO.GOV	(619) 525-8563