Southern California Stormwater Monitoring Coalition
Steering Committee Meeting Notes
June 6, 2017
10:00 a.m. – 2:00 p.m. (Pacific Time) at
Riverside County Flood Control and Water Conservation District
1995 Market Street, Riverside, California 92501

Attendees

Name	***Affiliation***
Adam Fischer	Santa Ana Regional Board
Andre Sonsken	City of San Diego
Arlene Chun	San Bernardino County
Arne Anselm (telephonic)	Ventura County
Grant Sharp	Orange County
James Fortuna	Orange County
Karin Peternel	Michael Baker Intl.
Ken Schiff	SCCWRP
Rebekah Guill	RCFC&WCD
Kris Flanigan	RCFL
Steve Steinberg	SCCWRP
Matt Yeager	City of Hesperia
Daniel Apt	Olaunu
Charlie Yu	LA City
Chris Lopez	LA RWQCB
Ava Moussa	RCFC&WCD
Chad Loflen (telephonic)	San Diego RWQCB

1. Introductions, meeting minutes, updates, and announcements

   Arne not in person (on phone) so Grant will be the Chair for today.
   Did not have WebEx access so the presentations will be sent out later (Meeting Slides included as Attachment 1).
   Michael Trapp (SMC Administrative Officer) not able to join us so Karin Peternel (Michael Baker) will take notes.

   Items:
   a. Approve March meeting minutes:
      - Ken made a motion to approve, Andre seconded. Meeting minutes are located on website: http://socalsmc.org/services/smc-meetings/
   b. Updates and announcements from group:
      - Welcome Chris Flanagan, new with Riverside.
      - Kurt Berchtold retiring (Santa Ana RWQCB), the Board will be holding a special meeting to replace him (this month). Arne said that a recruitment for his replacement as Stormwater Resource Manager should be out this week; he'll put it on the SMC listserve.

- Gayleen – Tom Howard retired and they don't have a replacement yet.
- Arlene is Mark's replacement
- Chad – someone else retired from SD Water Board so he will be in attendance now.

2. Administrative/Briefings

   a. 2016 / 2017Annual Report – Michael Trapp and Karin Peternel (Michael Baker International) (Attachment 1). This is the first one that Michael Trapp prepared, so the attendees were advised to look at the previous report (October, 2016) to get a sense of what is included in the event Michael calls members for discussion of any items.

3. Ongoing Projects (as necessary)

   a. Standardized Monitoring and b. Water Quality Index - Ken Schiff (Handout included as Attachment 2)
   Two projects that SCCWRP doing that are in parallel and touch each other.
   1) Water quality index, where we take our own monitoring data and turn it into information, where we can easily create an understandable number or letter grade. Ken gave an update at the last meeting; SMC agreed to monitoring questions we want the index to produce (attachment). .
   2) Standardized monitoring. Real title is UASM – Unified Approach to Stormwater Monitoring. Effort to standardize how we collect and measure data (hence the relation to #1). One produces data, the second turns the data into information. There are 3 tasks:
      1) Define monitoring questions
      2) Compile inventory of monitoring is being conducted now and how well it addresses the questions everyone cares about
      3) Create a work plan of how to standardize.

   Goal of today's discussion – to finalize or get agreement on what questions we want standardization to apply to (See Slides, Attachment 3). Discussion followed, ultimately selected to standardize receiving water monitoring, beyond just bioassesment, and include wet and dry weather; and stormwater outfall monitoring, both wet and dry weather.

   c. SMC Clean Project. See Attachment 3 for Daniel Apt's notes for review of Tasks 1-4.

   d. Toxicity Results Implications Results White Paper - Michael Trapp and Karin Peternel (Slides included in Attachment 4). Suggestions to finalize this and make available to a wider audience; also to have peer reviewed. Additional suggestions to 'tone down' a bit; just present results, keep neutral, not positive or negative. That will keep us on an even keel as an organization. Otherwise it will raise a lot of concerns around the state and nationally because the EPA is paying attention (especially since they did their own study and found very different variability). Increase sample size; include a reference to the EPA study. Outcomes needs to present options and challenges with each option.

Actions – Michael/Karin will send revised paper for review; SMC members will comment by July 10, M/K will incorporate changes and provide back to SMC for distribution to peer reviewers (Ken will help select reviewers). Suggested reviewers: EPA research scientist, discharger or discharger contractor, and an academic

4. New Projects (Discussion on Participation and Funding)

a. Toxicity Laboratory Intercalibration (Implementation Plan Update) - Ken Schiff. SMC members have been asked to start the conversation with their RB towards another round of the intercalibration study. How much would everyone expend on the next phase of the project based on budget projections? Members were/are asked to review the draft implementation agreement language; how much they are willing to spend (an extra 30k per jurisdiction, starting point); possibility of an in-kind tradeoff with regulator – which tests done for routine monitoring that could instead be used for the study. Approximately $700k spread out over 3 years ($10k per year for each jurisdiction). Reasons why a separate implementation agreement instead of master agreement include other potential budget items (Item 4b), takes so long to have contracts signed. Also what should primary focus be?

No action item now – wait until hear about 4b to help SMC members decide where they want to spend the money.

b. SMC Data Portal. Steve Steinbert from SCCWRP presented their proposal (Attachment 5). Review of data portal, how it would interact with CEDEN, costs. CEDEN going to be updated, so it's hard to build to a moving target. This will automate a lot of work that is being done now at great cost; would pay for itself in 3 years.

No action item now –SMC members decide where they want to spend the money (intercalibration or data portal).

c. Others

None

5. Budget Approval (FY 17 -18)

SMC has $300/per year to spend. Need to select one of the two projects to do under the master agreement. Discussion amongst different jurisdictions present about where they see the money best being spent for their org. San Bernardino – data portal. Riverside – data portal. LA – toxicity. Water Board members – both. San Diego – data portal, but can budget for both. Because there are still questions on the additional benefit of the toxicity project, Ken is going to prepare a fact sheet.

Went to a vote for funding with three options:

1. Master agreement to fund SMC open data portal – 4 votes
2. Master agreement to fund 3rd toxicity intercalibration study – have to do in-kind toxicity trading – 1 vote
3. Master agreement to fund SMC data portal and pursue toxicity 3rd through outside implementation agreement – 5 votes

Action Item: Budget approval requires written approval, so Ken will update the 17/18 annual budget for the open data portal project. He needs confirmation from jurisdictions that can participate, and will get an email from Grant approving the funds for the master agreement. Michael Trapp will go to each member agency and find out who is in or out for Option 3 (pursuing toxicity 3rd round through outside implementation agreement). If all members participated it would be $15k each; but if only 10 participated, cost will increase. This will be presented to September SMC meeting to make a decision about whether to move forward with the 3rd round based on costs.

Grant – recognize Great Gearhardt, because the SWAMP program is hosting its second annual Data Science Symposium at the end of June. Two days of presentations are lined up focusing on integrating and using data from not just water quality or stormwater runoff perspective but data from other water resource data and putting it into information and knowledge that can be used for management actions and taking actions. It will be a webcast. Lot of presentations will be by SCCWRP. Steve will demonstrate the Open Data Portal (that won't be available via the webcast, only in person). http://www.waterboards.ca.gov/resources/data_databases/wq_science_symposium.shtml

7. Next Meeting
    a. September 5th 2017, 10 AM - 2 PM (County of Orange - OC Public Works, 2301 N. Glassell Street, Orange, CA 92865)

Attachment 1

Southern California Stormwater Monitoring Coalition
Steering Committee Meeting Agenda
June 6, 2017
10:00 a.m. – 2:00 p.m. (Pacific Time) at
Riverside County Flood Control and Water Conservation District
1995 Market Street, Riverside, California 92501

Call in Number 866.600.6392 Passcode – 1523466

Introductions

Updates

Announcements

March Minutes Approval

Southern California
STORMWATER MONITORING
Coalition

Southern California Stormwater Monitoring Coalition
Steering Committee Meeting Minutes
March 7, 2017
10:00 a.m. – 2:00 p.m. (Pacific Time) at
Riverside County Flood Control and Water Conservation District
1995 Market Street, Riverside, California 92501

1. Introductions
   Sign-in sheet attached

2. Meeting minutes,
   Unanimously approved

3. Updates, and announcements
   Kurt Berchtold is retiring from the Santa Ana RWQCB
   Arne Anselm replacement advertisement will likely be public before the next SMC Meeting.
   LA County Department of Public Works will be getting a new director effective March 1st

4. Administrative/Briefings
   a. Web Site Revamp – Michael Trapp (Michael Baker International)
      Steering Committee members liked the updates and were excited about the expanded capabilities.
      Action: All future distribution of documents will be conducted via website and not email to cut down on email traffic.
   b. Annual Report – Michael Trapp
      Steering Committee member suggested changes to include budget details for projects to highlight leveraged money from non-SMC sources and other minor corrections. References to SMC research agenda specific objectives will be included in next year's report.
      Action: Additional financial information will be added along with other corrections within two weeks and give SC one week to provide electronic approval of corrections. Post final version to website.

Annual Report FY 16/17

Southern California Stormwater Monitoring Coalition

- Master agreement calls for annual report to be submitted by October 1st.
- Michael will be contacting SMC Project Leads to provide updates to the report.
- Daft to be sent for review prior to the September meeting for review
- Approval by Steering Committee at September Meeting

Ongoing Projects

Ken Schiff

- Standardized Monitoring
- Water Quality Index

Ongoing Projects

SMC CLEAN Project

- Daniel Apt (Olaunu), Michael Trapp, and Matt Yeager (Yeager Consulting)

Ongoing Projects

Southern California Stormwater Monitoring Coalition

Toxicity Implications Results White Paper

- Michael Trapp and Karin Peternel

New Projects (Discussion on Participation and Funding)

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- Toxicity Laboratory Intercalibration

New Projects (Discussion on Participation and Funding)

- SMC Data Portal / Data Management

Budget (FY 17 -18)

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Committee Member Items

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Next Meeting

September 5th, 2017

-10 AM - 2 PM

County of Orange - OC Public Works

2301 N. Glassell Street, Orange, CA

Attachment 2

Stormwater Monitoring Coalition: Compiled MS4 Monitoring Questions

A total of 15 different monitoring questions have been stated by 7 different SMC permittees in either their NPDES permit of Monitoring Plan as their monitoring goal or purpose:

1) Define water quality status, trends, and pollutants of concerns (RC, SBC, OC)
2) Identify stormwater pollutants
    a) Characterize pollutants associated with urban runoff (OC, RC, SBC, LAC, CLB, VC)
    b) Characterize stormwater discharge (SDC)
3) Assess the contribution of stormwater to receiving water quality
    a) Influence of urban land use on water quality and identify water quality problems associated with urban runoff (OC, RC, SBC)
    c) Chemical, physical, and biological impacts to receiving water by MS4 (SDC, LAC, CLB, SDC, VC)
4) Identify other sources (e.g., atmospheric deposition, contaminated sediment) of pollutants in runoff (RC, SBC, OC)
5) Identify and prohibit illicit discharge (RC, SBC, OC, SDC) or illegal connections (RC, SBC)
6) Identify the source(s) of a specific pollutant (SDC, CLB, LAC)
7) Identify receiving water that needs additional actions for TMDL compliance (all permittees)
8) Determine mass loading rates for different urban land use categories (OC)
9) Determine runoff pollutant concentrations and loads at the source level (e.g., near a golf course or restaurants) (OC, RC)
10) Evaluate effectiveness of BMP (OC, RC, SBC, SDC) or pollutant control technologies (LAC, CLB, VC)
11) Evaluate cost and benefits of proposed stormwater quality control programs and share with the stakeholders, including public (OC, RC, SBC)
12) Analyze and interpret collected data to determine the impact of urban runoff on receiving water and/or validate relevant water quality models (RC)
13) Develop and support an effective runoff management plan (RC, SBC)
14) Evaluate the effectiveness of water quality management plan (SDC, RC)
15) Assess the overall health of receiving water (SDC)

Attachment 3

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SMC CLEAN &
SMC BMP Data Ad Hoc Committee
Verbal Update
June 6, 2017
10:00 AM - 2:00 PM

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1. **SMC CLEAN Update:**
    a. Task 1: Form and Coordinate a Project Technical Advisory Committee
        i. The last SMC CLEAN TAC meeting was on May 22, 2017 from 1:30 – 3:30 PM at SCCWRP.
        ii. The focus of the last SMC TAC Meeting was the following:
            1. Ballona Biofilter Monitoring Presentation – John Dorsey, LMU
            2. Revised Draft SMC CLEAN LID/GI Monitoring Protocol –
            3. Existing Monitoring
                a. Review of data analysis from RC flood planter box
                b. Review of data from some other sites
                    i. Cabrillo Heights
                    ii. La Pata
                    iii. 43rd St & Logan Ave
                    iv. Chollas Creek
            4. Stakeholder Collaboration Update
            5. Next Steps
                a. Finalize Monitoring Protocol
                b. Finalize monitoring approach & associated costs
                c. Implement monitoring approach
                d. Continue to research and obtain additional biofilter data
                e. Continue to collaborate with project partners

f. Define data analysis that will be performed

iii. The next SMC CLEAN TAC meeting is set for August 15th .

b. Task 2: Research Existing Data

i. Research of existing data is progressing including obtaining new data from:

1. RC Flood LID Campus retrofit project
    a. -received data and provided results of analysis at TAC
2. OC Glassell Campus retrofit project
3. UCSD Scripps LID sites
4. UCI Extension LID site
5. Council for Watershed Health LID sites
6. SWRCB on as part of grant funded LID projects.

c. Task 3: Implement initial monitoring procedures in a beta test phase

i. Coordination with existing monitoring sites is ongoing during this wet season.

ii. The new monitoring approach includes using the best of our ability the current sites we are coordinating with including:

a. RC Flood Campus LID Retrofit
    i. Refocus monitoring on biofiltration and bioretention
    ii. Working with RC flood on next steps for upcoming wet season monitoring
b. OCPW Glassell Campus LID Retrofit
    i. Small reconfiguration of biofiltration planter box for monitoring
    ii. Use biofiltration test cells and perform artificial spiking experiments
c. Council for Watershed Health Bioretention Sites
    i. Evaluate monitoring performed to date and collaboration for future
d. UCI Extension LID Site

i. Evaluate data and initial configurations on site reconfiguration and monitoring

iii. We received verbal and written comments from the SMC CLEAN TAC on the revised monitoring protocol and we will be finalizing the protocol

1. Providing to the final protocol to the SWRCB prior to the GI/LID Data Standards Status Meeting hosted by the SWRCB.

d. Task 4: Summarize all monitoring data, make recommendations, and update the LID Manual

i. The only current activity is a re-review of the SMC Manual and identifying sections that will need updating or addition like a monitoring protocol section and updates to maintenance and design related to the results of the SMC CLEAN recommendations.

e. Task 5: Ongoing Collaboration with Project Partners

i. Collaboration with project partners has been ongoing as part of the project including noted collaboration:

1. RC Flood,
    a. collaborating on next steps for wet season monitoring .
2. Orange County,
    a. Collaboration on reconfiguration and monitoring at the Glassell Campus Retrofit
    b. Biofiltration test cells
3. UC Irvine/ UC MRPI (Multicampus Research Programs and Initiatives) Grant
    a. Participation at UC MRPI Mini Conference at UCR on 5/4/17
    b. Participation in working groups
4. UC South Coast Research and Extension Center

a. Coordination on potential reconfiguration of their site to integrate a bioretention cell/biofilter for monitoring

5. Council for Watershed Health
    a. Meeting on 4/21/17 regarding existing monitoring and future collaboration.
6. SWRCB
    a. GI/LID Data Standards Group
        i. Ongoing coordination to develop statewide standards for data for GI/LID
    b. Coordination on obtaining data from the different grant funded projects as part of the SMC BMP Data Ad Hoc Committee
7. China Sponge City
    a. Jian Peng with the China Sponge City of Qian'An for this collaboration.
    b. LID testing facility just outside of Beijing.

2. SMC BMP Data Ad Hoc Committee Update

a. The initial conference call of the SMC BMP Data Ad Hoc Committee was held in September with the purpose of the SMC BMP Data Ad Hoc Committee is to coordinate the compilation of BMP monitoring data including data that the SWRCB has.
b. The group has now evolved into GI/LID Data Standards group led by the SWRCB.
    i. Eric Stein and I sit on this group.
    ii. Discussions are focused on:
        1. statewide standards for data for GI/LID
        2. Database tool to draw from other regional databases.
        3. Potential use of SMC CLEAN
            a. LID/GI Monitoring Protocol
            b. Standard LID Project Data-Information List
    iii. Next meeting is 6/14/17

c. After a bit more coordination with SWRCB and these initiatives the need for the next SMC BMP Data Ad Hoc Committee meeting will be evaluated.

Attachment 4

Potential Impacts of Toxicity Testing Variability on Waterbody Impairment Status

DRAFT White Paper

J. Michael Trapp, PhD

Karin Peternel, M.Sc.

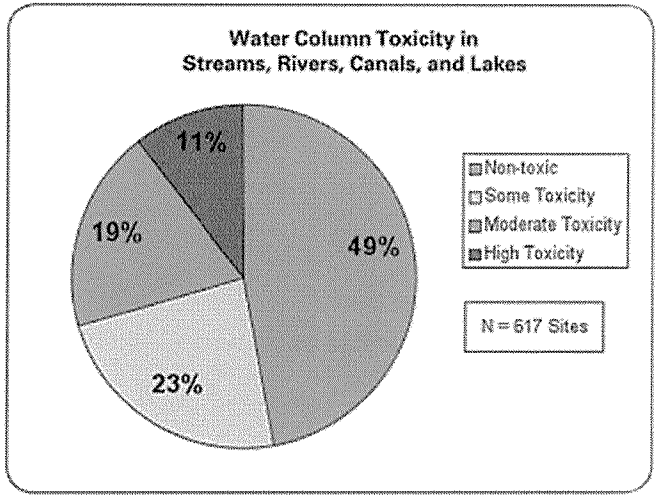
Michael Baker International, Carlsbad, California

Michael Baker
INTERNATIONAL

Southern California
STORMWATER MONITORING
Coalition

Project Background

- Increased water monitoring data shows the number of rivers, streams and lakes in California exhibiting overall toxicity have increased 170 percent from 2006 to 2010.
- Significant variability were seen in *Ceridaphnia dubia* reproduction toxicity test results in SMC laboratory intercalibration study
- Results by multiple laboratories using same standardized procedures have been found to have differing results
- Current study: Applied the variability seen in SMC study to eight sites for which *C. dubia* reproduction tests failed to see if would pass/fail under that variability and how many sites erroneously 303(d) listed



Magnitude of toxicity in California waters (www.waterboards.ca.gov/swamp)

Methodology

- Reviewed water bodies on which to evaluate impacts of variability:
  - ➢ Resulted in 8 water bodies with original data available for review
- Quantified the variability seen in SMC Toxicity Intercalibration Study
  - Lab dilution water: +-23%
  - Copper spike: +/-46%
  - Runoff (+/-23%)
- Analysis – could variability positively or negatively affect test result and subsequent 303(d) listing?
  - Percent effect (0 = nontoxic, 100 = toxic)

From: Schiff and Greenstein (2016). Stormwater Monitoring Coalition: Toxicity Testing Laboratory Guidance Document

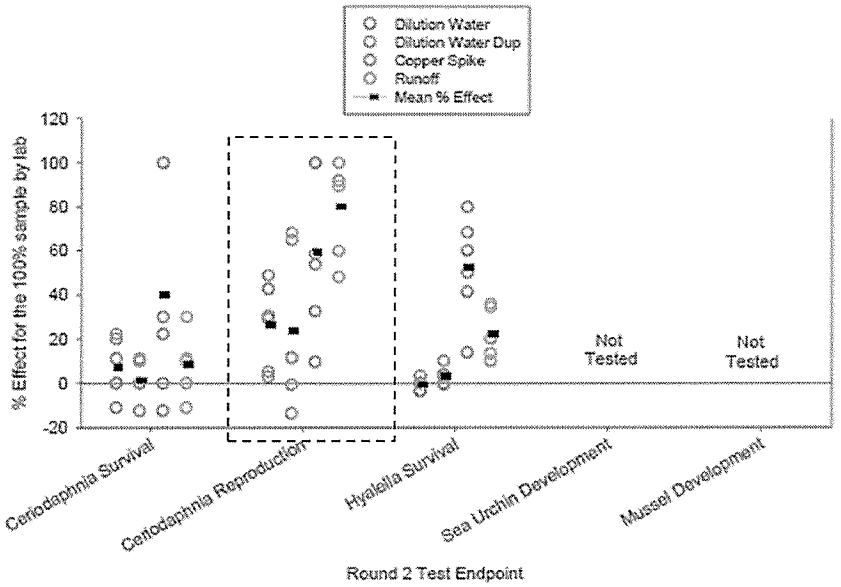


Figure 2. Toxicity test response (% effect) of the various endpoints to full strength (no dilution or 100%) samples during round 2 of the SMC intercalibration study. Each symbol represents the result from a single laboratory (see Table 9).

Findings

- Lower level of variability - >50% test results change
- High level of variability - 76-91% test results change

Result

- 7 of the 8 sites would not have met the listing criteria for 2 failures as a result of the potential variability, if *S. capricornutum* (algal toxicity) is not considered
- Real world implications: Encinitas Creek would not have had 2 failing events

Summary of Test Status Changes Based on Data Variability Treatments	Samples		Control Water
	22%	46%	23%
Scenario 1 - Fail to Pass (n=12)	7	11	7
Scenario 2 - Pass to Fail (n=21)	11	16	11

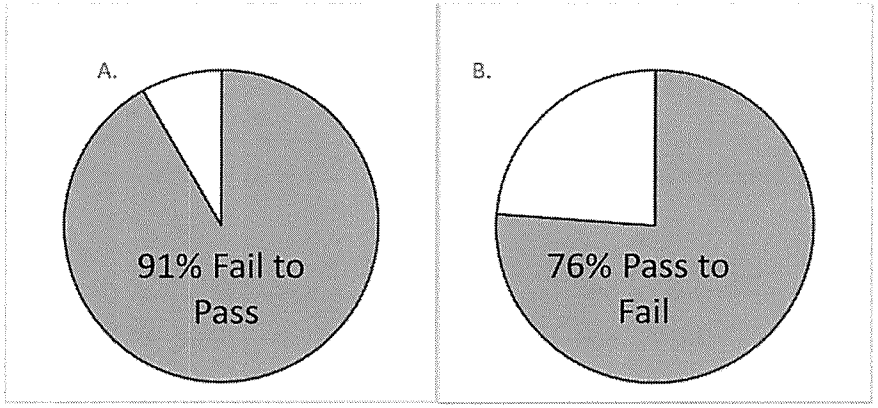
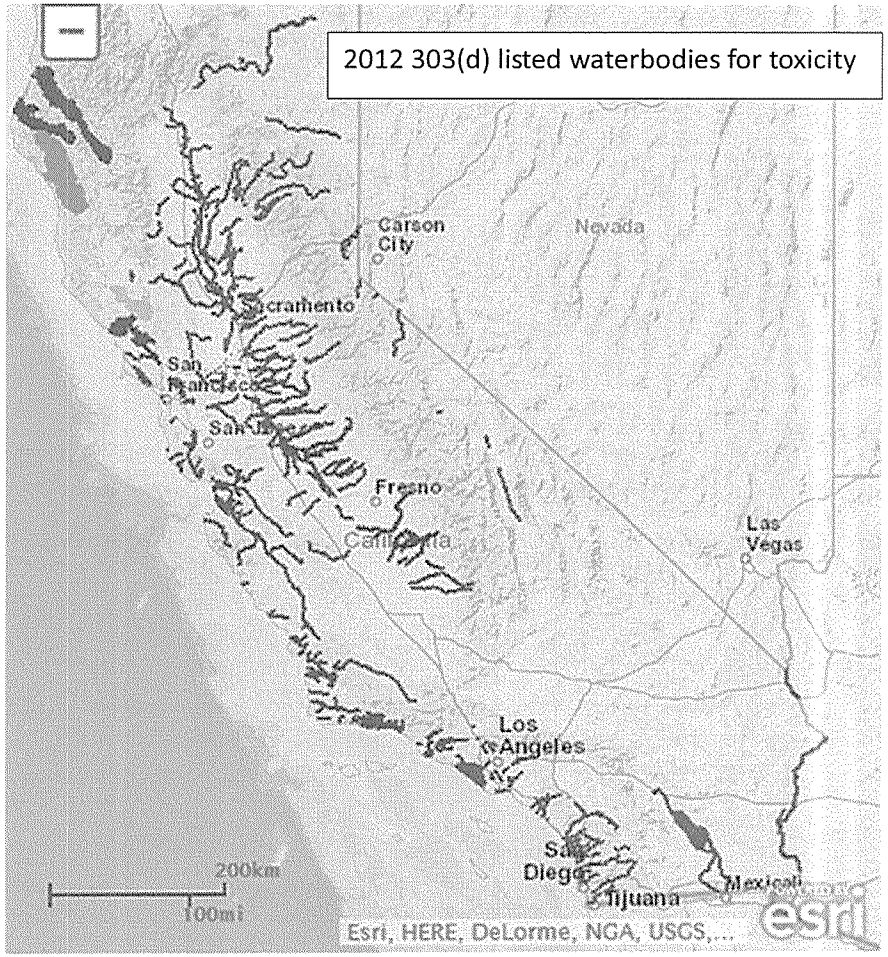


Figure 1. Pie charts showing the number of individual toxicity tests that could change from (a) fail to pass and (b) pass to fail based on the intercalibration Cu spiking variability applied to representative environmental samples where white remain the same and the shaded portions change test results.

Outcomes

- Continued variability observed in the intercalibration study has been shown to have the potential impact to directly affect listings of non-listed water bodies.
- Broader impacts to SMC programs and significant dollar amounts attached

1. Don't continue to use *C. dubia*
2. Conduct continued intercallibation study and try to improve the test



Attachment 5

Development of the SMC Data Portal and Initial Population with Regional Monitoring Data
Proposal to the Stormwater Monitoring Coalition
March 3, 2017

Background and Objectives

Sharing and leveraging data to make regional assessments and comparisons among member agencies is the backbone of the SMC, which is why data sharing and integration is consistently ranked as one of the SMC's highest priority research projects. The SMC's first data integration and sharing project was in 2003, where standardized data transfer formats (SDTF) were created and successfully used. In addition, several member agencies currently have these requirements in their NPDES permits. Technology has changed over the last decade. Open data portals are the new standard, which evolves the SDTF approach to create simplicity and ease of use, dynamic quality assurance checkers, a map-based web query interface, and easily customizable data visualization or on-the-fly calculations. This new technology comes largely without expensive investments in software or hardware among SMC member agencies – most members can submit or access data with a standard web browser – and requires only basic training. This approach can also streamline and enhance annual reporting requirements. While it is an "open data portal" the data can be constrained to any limited number of users, from only SMC members to public-facing, and based on simple toggle switches, can be changed at any point in time.

This project proposes to update and upgrade the SMC's data sharing and integration capabilities by migrating to an open data portal. The recommended portal technology is ESRI-based, a world-wide leader in open data portals, a technology already currently being used by SCCWRP and several SMC member agencies. The migration to an open data portal will require two phases comprised of four tasks. The first phase is to develop the portal architecture. This phase can be flexible and scalable to all of the SMC data categories including discharge, IC/ID, or receiving water monitoring, and can incorporate a variety of data types such as chemistry, microbiology, toxicity, physical habitat, rainfall/flow, or biological information. The second step is implementing an initial data set – we chose the SMC's Regional Stream Monitoring program. The Regional Stream Monitoring program provides a great initiator since sampling standardization and field/lab quality assurance already ensures comparability in data generation. As the Regional Monitoring results are increasingly being used for compliance assessments and watershed planning, new data requests pour in and now comprise up to 80% of the program's Administrative costs. So, open data portal investments now, ultimately will reduce ongoing costs for regional monitoring. The tasks associated with implementing the Regional Monitoring data set includes data submittal tools, data query tools, and data visualization and reporting tools.

Task and Deliverables

The proposed project will produce the following products:

1. A data portal that provides the architecture to accommodate data from the Regional Stream Monitoring program, and a framework to incorporate data from a broad range of additional SMC projects and programs

2. Incorporation of the SMC Regional Stream Monitoring program into the data portal to test and verify the enhanced ease of data entry, automated data and quality assurance checking, and web-based data query/download and automated reporting tools
3. An SMC specific open data portal with data sharing, analysis and reporting capabilities

The following tasks will be completed to produce the above products. The first three tasks relate to developing the basic architecture of the data portal. Tasks 4, 5 and the optional Task 6 relate to incorporating SMC data into the portal:

Task 1: Develop architecture for the data portal. The goal of this task is to develop the underlying data structures for the portal, including all required business rules, data submission procedures and QA/QC checks required. A series of interviews with SMC members will be conducted in order to define the scope, content, and general functionality of the portal, including future data types and needs.

Task 2. Develop data query tools. The goal of this task is to develop spatially explicit data query tools that allow user to readily access the breadth of SMC data types through a simple, unified web interface. Data query tools will greatly accelerate data requests and will more readily allow SMC data to be combined with other data types, such as compliance monitoring, BMP, or dry/wet weather runoff data.

Task 3. Develop automated reporting and visualization tools. The goal of this task is to develop tools that output regional monitoring data into standard report formats, including computed results and comparison to specified targets or thresholds. These formats can more readily be incorporated into compliance reports, watershed plans, causal assessments, or as background information for proposed actions/projects. The specific content and format for these standard reports will be developed in cooperation with the SMC technical workgroup and executive committee, based on their priorities.

Task 4: Incorporate regional monitoring data from multiple sources into the portal. The goal of this task is to migrate the regional monitoring data systems into the new portal. This will include updating the data structures, imposing data standards, establishing a process for assigning unique site-event identifiers, creating data input templates for seamless data submittals, and development of automated data checkers to ensure the completeness and accuracy of online regional monitoring data submittals. Data structures will also be created for key calculated measurements, such as biological index scores and physical habitat metrics, so that they will be more readily available to data users. We will create the data system to ensure future compatibility and interaction with related data systems that store SMC data, such as SWAMP, CEDEN, and eCRAM. We will use web services to make the data readily discoverable and transferable to these existing data systems.

Task 5: One time upload of regional monitoring data into CEDEN. The goal of this task is to upload the appropriate data types from the current SMC regional monitoring data set to CEDEN. This would be a one-time task intended to incorporate currently available SMC data into the CEDEN. Future connection with CEDEN would occur through web-services.

Task 6. Incorporate a second data source into the portal (OPTIONAL). The goal of this task is to build capacity for the data portal to accommodate data from an additional program or source (e.g. wet weather, TMDL, BMP, vertebrate monitoring). Necessary data templates, checkers, and data structures would be developed for the additional data sources. This task could be replicated for multiple additional data sources.

Schedule and Budget

The proposed project would take two years to complete (excluding the optional Task 6). The initial data portal would be completed by the end of year 1 including loading of existing SMC regional monitoring, and simple prototype query and reporting tools. The full data submittal tool would be ready to accommodate the Fall 2017 regional monitoring submittal. Refinements to the portal and additional data loading would continue through year 2, based on interaction with member agencies. The balance of the tasks relating to enhanced data query and reporting capabilities would be complete at the end of year 2.

The proposed budget for the project is show in the table below.

Task	Year 1	Year 2	Total
1: Data portal architecture	$ 25,000	$ 10,000	$ 35,000
2: Data query tools	$ 25,000	$ 10,000	$ 35,000
3: Automated reporting and visualization	$ 10,000	$ 75,000	$ 85,000
4: Incorporate regional monitoring data	$ 65,000	$ 20,000	$ 85,000
5: One-time data upload to CEDEN	$ 15,000	$ 15,000	$ 30,000
6: Incorporate second data source (OPTIONAL)		$ 50,000	$ 50,000
Total	**$ 140,000**	**$ 180,000**	**$ 320,000**

Points of Contact

- Eric Stein – erics@sccwrp.org, 714-755-3233
- Steve Steinberg – steves@sccwrp.org, 714-755-3260