County of San Diego

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January 11, 2013

Wayne Chiu, P.E.
California Regional Water Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Dear Mr. Chiu:

COUNTY OF SAN DIEGO COMMENTS – TENTATIVE ORDER NO. R9-2013-0001, REGIONAL MS4 PERMIT, PLACE ID 786088WCHIU

Thank you for the opportunity to comment on Tentative Order No. R9-2013-0001, NPDES No. CAS0109266, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region* (Tentative Order). These comments are offered by the County of San Diego (County) in addition to those submitted separately on behalf of the 21 Copermittees of Order 2007-0001 (San Diego Copermittee Comment Letter). In this respect, the Copermittee comments should be considered to represent a general group consensus and those below to provide additional input necessary to reflect the unique perspective of the County as Regional Principal Permittee and a large jurisdiction covering portions of eight Watershed Management Areas. Additionally, these comments build on input provided in our September 14, 2012, comment letter on the Administrative Draft, many of which we do not believe to have been sufficiently addressed in the Tentative Order.

We greatly appreciate the public process employed to date toward the development of a new and improved permit for the San Diego Region, as well as the openness of staff and Regional Water Quality Control Board (Regional Board) members in listening to the issues and concerns put forth by the County and numerous other interested parties. However, the County is unable to support adoption of the Tentative Order as currently drafted. This letter addresses our remaining issues, the three principal of which are: 1) inclusion of requirements from a scientifically flawed Bacteria Total Maximum Daily Load (TMDL) with unattainable targets and unrealistic implementation costs, 2) inclusion of receiving water limitation (RWL) language that unnecessarily exposes the County to liability from third-party lawsuits, and 3) unwarranted expansion of requirements for development and redevelopment projects.

Please also note that on November 9, 2012, Ron Roberts, Chairman of the County of San Diego Board of Supervisors, sent letters to Governor Jerry Brown and other members of the San Diego delegation explaining the Board of Supervisors' concerns over the cost and reasonability of the permit's requirements, specifically the incorporation of the Bacteria Total Maximum Daily Load (TMDL) and the unwarranted expansion of requirements for development and redevelopment projects. A subsequent comment letter echoing these same concerns was submitted by elected officials from 19 of the 21 San Diego Copermittees to Regional Board Chairman Grant Destache on November 13, 2012. Both letters are included here as Attachment 1 and should be entered into the public record on this matter.

1. Bacteria TMDL for Beaches and Creeks

The Tentative Order incorporates elements and requirements from Resolution R9-2010-0001, *the Revised Total Maximum Daily Loads (TMDLs) for Indicator Bacteria, Project I – Twenty Beaches and Creeks in the San Diego Region* (Bacteria TMDL). We specifically want to urge the Regional Board to not incorporate the Bacteria TMDL provisions in this permit renewal.

Legal Authority to Not Incorporate the Bacteria TMDL into the Permit

As documented in a letter to Catherine Hagen, Esq. (see Attachment 2), it is the legal position of our County Counsel's office that your Board has the authority to decline the demands of other interested parties to incorporate the Bacteria TMDL provisions in this permit renewal.

In 1987, Congress declared its intent to chart a different course for improving water quality flowing from MS4 systems by enacting Clean Water Act §402 (33 U.S.C.§1342). In establishing the "maximum extent practicable" (MEP) standard of CWA §402(p)(3)(B), Congress recognized and enacted a different standard than the technology-based requirements of CWA §301. The MEP standard is the legal standard for stormwater compliance.

In *Defenders of Wildlife v. Browner* 191 F.3d 1159, the Ninth Circuit held that the MEP standard of CWA §402(p)(3)(B) replaces the requirements of CWA §301(b)(1)(C) for MS4 dischargers. The Browner decision goes on to discuss the discretion vested in permitting authorities to either require strict compliance, or less than strict compliance, with water quality standards.

It is the County's belief that the November 12, 2010, United States Environmental Protection Agency (USEPA) memorandum concerning the incorporation and use of numeric water quality based effluent limitations (WQBELs) in permits is not dispositive of this issue. As acknowledged in its subsequent March 17, 2011, letter, USEPA is still considering whether to retain, reissue, or withdraw the 2010 memorandum. And, USEPA acknowledges that the 2010 memorandum "does not impose legally binding requirements on EPA, States, or the regulated community, nor does it confer legal rights or impose legal obligations on any member of the public."

Scientific flaws and unattainable targets justify exclusion of the Bacteria TMDL.

Serious scientific flaws and unattainable targets are the main reasons the County feels it is appropriate for the Regional Board to exclude the Bacteria TMDL from the permit at this time. The County hired Geosyntec Consultants, a nationally recognized firm with expertise in water

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quality engineering and the co-principal investigator on the USEPA/American Society of Civil Engineers International Stormwater BMP Database, to assess the scientific merits of the Bacteria TMDL and to analyze whether the TMDL's numeric targets are achievable in practice. There are four main concerns in this regard, which are discussed in more detail in the memorandum from Geosyntec Consultants that is attached to this letter (see Attachment 3).

First, the science used to develop the Bacteria TMDL underestimates the amount of bacteria that come from natural sources such as birds, wildlife, and natural decomposition. In doing so, it overestimates the amount of bacteria required to be controlled by the County and other responsible parties named in the TMDL. Specifically, the TMDL inappropriately applies data from a "reference" (or minimally developed) watershed in Los Angeles County, which is not representative of San Diego County. It mistakenly applies data from a "reference" beach system to fresh water inland creeks, where natural concentrations of bacteria have been shown to be much higher. The TMDL does not incorporate a body of more recent water quality data which shows that the TMDL's numeric limits are overly conservative. For example, Geosyntec's analysis in Attachment 3 clearly shows that even the reference watershed itself in Los Angeles County has exceeded the Bacteria TMDL's targets in more than half of the years monitored. It is not appropriate to set a water quality target so stringent that a watershed with little to no development cannot consistently comply. The San Diego and Orange County MS4 Copermittees, partnering with Caltrans and with technical assistance from the Southern California Coastal Water Research Project (SCCWRP), are spending close to $2 million to fund a local "reference" watershed study that will provide data much more appropriate to the water bodies regulated by the Bacteria TMDL. TMDL development should not have proceeded until this data collection was conducted. Section 1 of Attachment 3 presents more detail on this subject.

Our second concern is that the Bacteria TMDL does not adequately reflect public health protection. Recreational water quality criteria published by USEPA acknowledge that indicator bacteria are not predictive of human health risk in stormwater-dominated waters, such as those regulated by this TMDL. Moreover, urban runoff epidemiology studies show a weak correlation between bacteria concentrations and human illness. USEPA Quantitative Microbial Risk Assessment (QMRA) studies also show that the numeric objectives used in this Bacteria TMDL are overly conservative for sites with minimal human bacteria sources. Related to our first concern, many studies show that natural sources, which are not appropriately accounted for in this TMDL, contribute significantly to bacteria levels but present lower human illness risk. Section 2 of Attachment 3 presents more detail on this subject.

Third, although a scientific peer review was conducted on the Bacteria TMDL prior to its adoption, that review was much too limited in scope to provide adequate defense of the TMDL basis and approach. Section 3 of Attachment 3 presents more detail on this subject.

Fourth, after thorough review of available non-structural and structural BMP performance data, Geosyntec, USEPA's own technical investigator of the International Stormwater BMP Database, finds that the Bacteria TMDL's numeric targets are not consistently or reliably attainable even with significant investment in new infrastructure. This is not surprising given that the Bacteria TMDL essentially requires the impacts of over 100 years of urbanization to be reversed to pristine, pre-development levels. BMP technology simply does not exist to comply with the

TMDL's aggressive targets. Statistically evaluated monitoring data from the International Stormwater BMP Database indicate that all non-disinfection structural BMPs are not capable of reducing effluent concentrations that would achieve bacterial water quality objectives with the consistency, frequency, and predictability required by the TMDL. Disinfection systems are widely considered not to be suitable or cost-effective for treating wet weather MS4 discharges, which are a primary focus of this TMDL. Section 4 of Attachment 3 presents more detail on this subject.

For all of the reasons discussed above and in Attachment 3, it is appropriate for the Regional Board to use its discretion to exclude the Bacteria TMDL from the permit at this time.

Practical Considerations

From a recent summary by Regional Board staff, County of San Diego Copermittees already spend approximately $119 million per year on programs to improve water quality in the San Diego region. Those programs have improved water quality in general and at beaches specifically throughout this region. For example, according to Heal the Bay's recent beach report cards, over 90% of San Diego County beaches receive A or A+ grades during dry weather conditions, when the vast majority of recreation occurs. With ever-increasing knowledge gained through trial and error, and with the Tentative Order's Watershed Quality Improvement Plan (WQIP) concept expected to encourage existing resources to be focused in more efficient and effective ways, the County expects to continue the march toward improved water quality using its current level of resources.

By Regional Board staff estimates (see Appendix R of the Bacteria TMDL Technical Report), and as confirmed by San Diego Copermittees through recent analysis using state-of-the-art BMP forecast modeling, implementation of the Bacteria TMDL in the next permit cycle would add a magnitude of additional costs to Copermittee budgets that is unsustainable using existing methods for raising general fund monies, given California's legal constraints on taxation or fees. As your Board has heard, the range of additional costs to the region that attributable to the Bacteria TMDL alone is expected to be $144 million to $272 million per year, meaning billions of additional taxpayer dollars over the compliance period. Funding does not exist to support this additional level of investment. If, in the future, a coalition of partners, including the Regional Board, environmental groups, regulated industry, Copermittees, and other stakeholders, decided it was in the best interest of the community to ask the public to support additional revenues for such an investment, only then could the County potentially support such significant expenditures. Without a reliable funding source, compliance with the Bacteria TMDL is simply not possible at this time.

As presentations in the adoption process have shown, given the unique challenges associated with bacteria as a constituent in stormwater, the cost-benefit analysis dictates that implementing the Bacteria TMDL at this time, as written, would be bad public policy. Studies and experience show that any magnitude of controls for bacteria, up to and including disinfectant efforts, will not consistently achieve the Resolution's numeric standards, even assuming the expenditure of billions of dollars. So, the sensible and logical next step is to take a hard look at the standards and assumptions of the Bacteria TMDL and devise plans to improve water quality using existing resources and as realistically achievable with today's scientific methods.

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With regard to the unique circumstances concerning bacteria, because the science shows that consistent achievement of the Bacteria TMDL numeric standards is not possible, given any level of expenditure, imposing the Bacteria TMDL as currently written would exceed the "maximum extent practicable" standard. Accordingly, we believe your Board is vested with the discretion to elect not to incorporate the Bacteria TMDL provisions at this time, and it would be justified to open a process to revisit and re-examine the Bacteria TMDL assumptions in the context of its basin planning process, instead of taking the irrevocable step of incorporating the TMDL into the permit and potentially wasting valuable taxpayer dollars that could better be spent on achievable water quality improvement goals.

If, over these objections, your Board chooses to include the Bacteria TMDL into the permit, the San Diego Copermittees have proposed alternative language that, although still not acceptable to the County, would more appropriately incorporate the TMDL into the permit in a manner consistent with the intent of the TMDL Basin Plan Amendment.

2. Receiving Water Limitations (RWL) Language

Significant concerns have been expressed by the County and other Copermittees about third-party liability risks resulting from the Ninth Circuit's interpretation of receiving water limitation (RWL) language in the Los Angeles Region's stormwater permit. While we appreciate the State Water Resources Control Board's willingness to take comment and review those concerns, it may take several months for the State Board to act. The Tentative Order retains language similar to the problematic language reviewed in the *LA v. NRDC* case. This leaves the County and other Copermittees immediately exposed to similar litigation from third parties for violations of water quality standards. We know that several varied proposals to modify RWL language have been made at the state and local levels. The San Diego County Copermittees have proposed multiple alternatives, first in response to the April 2012 Administrative Draft Permit, which were rejected, and now to this Tentative Order.

The County suggests a simple solution consistent with Congress' intent in enacting CWA §402 as discussed above: simply remove the RWL language in Provision A of the Tentative Order. Federal law does not require imposition of the RWL language for MS4 systems. There is precedent for this action; a number of USEPA issued stormwater permits throughout the country do not include this language. Your Board has the discretion under CWA §402 and *Browner* to remove the language. If USEPA does not consider the RWL language to be essential to MS4 permitting, it seems logical that your Board is not required to include it in the new permit.

State Water Board policy supports the iterative process approach to water quality improvement, and acknowledges that water quality standards for many pollutants from MS4s cannot be met immediately. Therefore, it is unrealistic and at odds with the iterative process to enact a standard that puts public entities under threat of third-party lawsuits, even when they are diligently spending significant time and public money pursuing water quality improvement. The permit could still include its prescriptive requirements and the WQIP features that all parties believe will focus resources in each watershed in the most productive fashion, through the iterative process envisioned by Congress for MS4 systems.

Removal of the RWL language would eliminate the inevitable jousting over modified language proposals and the uncertainty created by its retention in light of the *LA v. NRDC* ruling. Copermittees would simply be obligated to focus on permit condition compliance, including the tasks identified in approved WQIPs, subject to Regional Board enforcement if appropriate. Removal of the language would not create a "free pass"; to the contrary, it would encourage effective water quality monitoring that might otherwise be discouraged by the specter of third-party lawsuits like those filed in the *LA v. NRDC* case.

3. New requirements for development and re-development projects.

On-site retention requirements for Priority Development Projects

The County does not support the Tentative Order's shift from current permit requirements by requiring Priority Development Projects to "retain" rather than "treat" pollutants. We specifically request that the language in Tentative Order section E.3.c.(1)(a) be changed as follows: *"Each Priority Development Project must be required to implement LID BMPs that are designed to ~~retain~~ treat (i.e. intercept, filter, store, infiltrate, evaporate, and evapotranspire) onsite the pollutants from storm water to the MEP."* All other applicable language in the Tentative Order should be made consistent with this change.

The shift to a "retention" standard will require large stormwater controls and corresponding cost increases, and lacks a scientific peer-reviewed study that considers all possible environmental impacts. Runoff is an important water source to creeks and rivers in our semi-arid climate. Retaining more than pre-project volumes of water could result in loss of downstream habitat and subsequent channel erosion. USEPA Municipal Permit Improvement Guide, Chapter 5, Page 54, recommends retaining pre-project volumes and SCCWRP's *Hydromodification Assessment and Management in CA* recommends a water balance approach to mimic natural hydrology.

The ability to retain water is constrained by many factors, such as: soil types, space, underground utilities and water table level. The permit should not include performance standards that are not possible onsite for most projects in the San Diego region. Projects need to be provided with a means to comply onsite even when soil conditions are poor.

The County hired Rick Engineering, a highly regarded company in the field of water quality engineering, to estimate the cost increase to development projects having to implement the new retention standard. As explained in detail in Attachment 4 (Rick Engineering Cost Comparison Study, December 2012), costs are expected to increase two- to 12-fold from the current Permit standard of "infiltrate, treat or detain". The San Diego Copermittees have invested considerable time and resources to develop a technically sound, effective, and defensible Standard Urban Stormwater Mitigation Plan (SUSMP), which was approved by the Regional Board in 2010. Low Impact Development (LID) and Treatment Control BMPs are efficient at pollutant load reduction. In many priority development projects, standard LID and treatment control BMPs are more than adequate for full pollutant load reduction. Existing requirements for development and redevelopment are already designed to improve water quality; therefore, forcing all priority development projects to retain the pre-developed 85th percentile storm volume is not scientifically justified, could be harmful to the watershed, and is forcing a "one size fits all" approach on all projects.

In addition, requiring the retention standard to be based on when the site was historically undeveloped and naturally vegetated may impose mitigation beyond a project's impacts. Applying the pre-development reference condition to sites that are, in fact, developed would expose the Copermittees to litigation risk and may be unenforceable. Whereas, the pre-project standard allows the appropriate nexus to the project's impacts and is enforceable by the local jurisdiction. Please see the letter from the City of San Diego, City Attorney, to Catherine Hagen, dated December 19, 2012, for additional justification for why a "Pre-development (naturally occurring)" standard is not supported.

Offsite Mitigation / Alternative Compliance Programs

The County has serious reservations about the creation of an alternative compliance program to allow private development to mitigate for project impacts off-site. There are significant administrative costs associated with developing mitigation methodology, establishing off-site locations suitable for mitigation, and establishing outside agreements with agencies to perform perpetual maintenance. Plus, there is the cost of constructing the piping from the project sites to the mitigation area (due to Tentative Order section E.3.c.(3)(a)(iv), which prohibits the use of receiving waters to convey stormwater runoff from a development site to the location of off-site mitigation). In addition, the taxpayer (not the developer) will ultimately be responsible for the perpetual maintenance of the piping and the offsite mitigation lands. And finally, the short time frame of four years for an alternative compliance in-lieu fee does not allow enough time to leverage enough resources from multiple projects to pay for the establishment of a regional solution prior to the first private project completion (occupancy). A State loan program will be necessary to provide a funding mechanism to initiate mitigation projects (similar to Clean Water State Revolving Fund used for Wetland mitigation).

The County recommends the following changes in order for an alternative compliance program to be effective:

- The alternative compliance program should be administered directly by the Regional Board. Applicants wishing to utilize off-site mitigation must have approval by the Regional Board for mitigation applicability, option, location and perpetual maintenance fee to be eligible for alternative compliance within a jurisdiction.

- Delete section E.3.c.(3)(a)(iv), which prohibits receiving waters from being utilized to convey storm water runoff to the alternative compliance options

- Change Section E.3.c.(3)(a)(iv) to allow for a ten-year alternative compliance in-lieu fee.

Mitigation for Loss of Sediment Supply

Tentative Order section E.3.c.(2)(b) as written is unclear and implies that each development project will be required to conduct studies and compensation for the loss of sediment supply specifically on site. However, the ability to compensate for the loss of sediment supply has not yet been fully researched, nor have practices been developed to accomplish this. Therefore, the ability to require sediment compensation on a project-by-project basis is not yet validated or

possible. The County recommends the language be removed from section E.3.c.(2)(b) and moved to Section E.3.d. as line item (6) so that it can be addressed regionally instead of at a project level: "Update sediment supply mitigation procedures, as research becomes available, to compensate for significant losses of sediment supply anticipated as a result of development." This proposed wording change would allow the Copermittees to study and adapt to how sediment supply should appropriately be managed.

Vector Breeding in Storm Water Management Devices

The existing permit includes vector-related language intended to raise awareness of the potential unintended public health risks resulting from mosquito production in certain storm water management devices. The Tentative Order does not include this language. The removal of the vector-related language raises a significant concern with the County's Department of Environmental Health, and the County requests that it be placed back into the proposed draft to protect public health. Please see the Department of Environmental Health's detailed comments on this issue in Attachment 5.

Other Concerns

In addition, the County fully supports the following San Diego County Copermittee recommendations related to requirements for new and re-development projects:

- Maintain the existing exemptions in the Regional Board-adopted San Diego Hydromodification Management Plan.
- Maintain the "pre-project" rather than "pre-development" standard for controlling runoff flow rates and durations.
- Instead of adjusting hydromodification management requirements now, reference the recently Board-adopted Resolution No. R9-2010-0066.

More detail and discussion on all of these recommendations is provided under separate cover in the San Diego County Copermittees' comment letter.

4. Attachment E, Total Maximum Daily Load for Total Nitrogen and Total Phosphorus in Rainbow Creek Watershed

The Rainbow Creek TMDL for Total Nitrogen and Phosphorous assigns a Load Allocation (LA) to the County. The Tentative Order inappropriately incorporates this Load Allocation as a Waste Load Allocation (WLA). We are aware of no legal basis for such a change, and therefore believe it was made in error. We request that the Regional Board strike the Rainbow Creek TMDL from Attachment E of the Tentative Order.

5. Santa Margarita Watershed WQIP and Transitional Monitoring Program

The County requests that the development of a WQIP and of a modified transitional monitoring program for the Santa Margarita River Watershed Management Area (WMA) be deferred until such time as the Riverside County Copermittees are covered under the reissued Order.

We are particularly concerned that the resource and time commitments required of dischargers, stakeholders, and Regional Board staff to develop a *provisional* WQIP for a limited portion of the Santa Margarita River WMA is not justified. San Diego County represents only 19% of the total land area and 12% of the population in this WMA. The extensive effort required to develop a WQIP for this limited area would be commensurate with that required to go through a full and inclusive WQIP process for the entire WMA – which would again be required once the Riverside County permittees obtain permit coverage. But this "first round" iteration would necessarily exclude many of the watershed stakeholders representing the Riverside County portion of the watershed, as well as other potential state and federal stakeholders. It simply does not make sense to invest in a "partial" WQIP process and to then repeat it on enrollment of the remaining watershed permittees – quite possibly only one or two years later. A full and inclusive process that involves all relevant watershed stakeholders should be the goal of WQIP development. Piecemeal plan development is antithetical to the WQIP vision.

We request that the County be allowed to use the current Watershed Urban Runoff Management Plan (WURMP), including the water quality priorities developed pursuant to Order No. R9-2007-0001, to guide implementation of Provisions D and E within its jurisdiction. We also request a reduction in the number of wet weather MS4 outfall discharge monitoring stations in the transitional monitoring program from five to two stations since: 1) the land uses within the unincorporated County represent only residential and agricultural use and not the full range of land uses listed in Provision D.2.a.(3).(a), and 2) this level of effort better reflects the County's portion of the WMA in terms of population and land area.

We understand that continued progress must be made during any transitional period, and can assure the Regional Board that the County is committed to maintaining its existing commitments in this WMA. We have already demonstrated, through the implementation of a 319(h) grant received in 2006, that we are committed to implementing actions within Rainbow Creek Watershed to reduce nutrient loadings. More recently, we have been awarded another 319(h) grant for Rainbow Creek to implement education and property evaluation programs targeted to agricultural and residential audiences, as well as extensive receiving water quality monitoring.

In addition to these implementation activities, the County, in partnership with Riverside County Flood Control and Conservation District, is committed to furthering our understanding of how nutrients are impacting the beneficial uses in the watershed. This effort is being funded through a Proposition 84 Integrated Regional Water Management (IRWM) grant to "test-drive" the State Water Board Nutrient Numeric Endpoint (NNE) process. This work will include the development of a Nutrients Process Plan to define the NNE process and to form as the foundation of an agreement between the various dischargers in the watershed and the Regional Board. The grant funds are also being used to collect background information, coordinate and facilitate stakeholder input and participation, complete data collection and modeling of the estuary, and to conduct water quality monitoring needed for the NNE process.

6. Non-Storm Water Discharges of Irrigation Runoff

Section B.2 of Order R9-2007-0001 requires that discharges from irrigation water, lawn watering, and landscape irrigation (collectively "over-irrigation discharges") be prohibited only where they have been identified as a <u>significant source</u> of pollutants to waters of the U.S. In

contrast, Section E.2.a of the Tentative Order categorically defines these as illicit discharges based on a conclusion that each represents a source of pollutants to waters of the U.S., thus requiring their outright prohibition.

In our comment letter on the Administrative Draft Permit, we noted the significance of this change and posed two critical questions that remained unanswered. First, we requested a rationale for the determination that these irrigation runoff discharges are sources of pollutants to receiving waters. And second, we asked that if such a rationale were provided, these discharges alternatively be added to Section E.2.a.(4), which would allow their control through statute, ordinance, permit, contract, order, or similar means rather than outright prohibition. The Fact Sheet/Technical Report provided as Attachment F of the Tentative Order partially answers the County's first question and does not address the second. Our remaining concerns are addressed below.

Question 1: Are irrigation water, lawn watering, and landscape irrigation discharges [significant] sources of pollutants to receiving waters?

Regarding the designation of over-irrigation discharges as sources of pollutants to receiving waters, the Fact Sheet (pp. F-74 through F-77) states:

"Non-storm water discharges resulting from over-irrigation have been found to be a source of several types of pollutants (e.g., nutrients, bacteria, pesticides, sediment) in receiving waters. The San Diego Water Board and the Copermittees have identified categories of non-storm water discharges associated with over-irrigation as a source of pollutants and conveyance of pollutants to the MS4 and waters of the United States in the following documents...". In support, six references are provided and briefly described.

1. SmartTimer/Edgescape Evaluation Program (SEEP) Grant Application;
2. 2006-2007 Orange County Watershed Action Plan Annual Reports;
3. Fiscal Year 2008 Carlsbad Watershed Urban Runoff Management Program Annual Report;
4. 2007-2008 San Diego Bay Watershed Urban Runoff Management Program Annual Report;
5. Orange and Riverside County Copermittee Public Education Materials; and
6. Los Penasquitos Lagoon Sedimentation/Siltation TMDL Technical Report (June 2012)

Each is accompanied by one or more qualitative statements about the nature of urban runoff and the potential or actual contribution of various types of over-irrigation practices to it. The following overall conclusion is provided: "These documents confirm that non-storm water discharges associated with over-irrigation are a source of pollutants and should be addressed as illicit discharges to the MS4."

Several aspects of this analysis are problematic. In moving from the language of the previous permit to that of the Tentative Order, the applicable litmus for evaluation of potential discharge prohibitions has been modified from significant sources of pollutants to sources of pollutants. While we understand that this change is consistent with 40 CFR 122.26(d)(2)(iv)(B)(1) ("flows shall be addressed where such discharges are identified by the municipality as sources of

pollutants to waters of the United States."), we would also emphasize that the implications of such a change go well beyond a paper exercise. Clearly, some potential exists for any over-irrigation discharge to reach receiving water. The pertinent question is really whether this potential is of a demonstrated level of significance that would justify the broad policy changes and resource commitments necessary to enforce their outright prohibition. From the little evidence cited in the Fact Sheet/Technical Report, we believe that such a case is not made.

None of the statements provided in support of staff's conclusion are supported by data, technical analysis, or any other form of substantiation. In particular, the use of outreach materials and a grant application (items 1 and 5) to justify the establishment of a categorical discharge prohibition covering portions of three counties is overreaching and inappropriate. Moreover, even if the remainder of the sources cited could be accepted as supporting staff's conclusions for the limited areas to which they apply (the Carlsbad, San Diego Bay, and Los Penasquitos Watersheds), they would not provide support for a more general conclusion that other watershed areas covered by the permit (San Juan, Santa Margarita, San Luis Rey, San Dieguito, San Diego, and Tijuana Watersheds) are similarly impacted.

It also bears emphasis that none of the discussion provided supports the conceptual leap that staff has taken from general statements concerning the presence of over-irrigation discharges to more specific conclusions that they are a source of pollutants to receiving waters <u>and</u> that they should be addressed as prohibited discharges. No evidence for either of these conclusions is presented.

Question 2: Why are over-irrigation discharges not included in Tentative Order Section E.2.a.(4) along with air conditioning condensation, individual residential vehicle washing, and dechlorinated swimming pool discharges?

In our comment letter on the Administrative Draft Permit, we noted that even if irrigation runoff discharges are determined to be sources of pollutants to receiving waters, a more appropriate compliance pathway for managing them is provided in Tentative Order Section E.2.a.(4), which would allow their control through statute, ordinance, permit, contract, order, or similar means rather than outright prohibition.

The Fact Sheet/Technical Report (p. F-76) states that "[p]rohibiting non-storm water discharges associated with over-irrigation, however, is not a new requirement for the Copermittees because it is also consistent with and required by the Water Conservation in Landscaping Act (AB 1881, Laird)." It is true that important conceptual similarities exist in the aims this Act and the Tentative Order. However, to equate the two sets of requirements is to miss critical distinctions between them, i.e., one establishes a variety of tools and approaches to conserve water and to discourage and prohibit runoff from leaving properties, and the other simply makes it illegal for over-irrigation runoff to enter MS4s. Since the former requirements are already in place through the adoption of local water conservation ordinances (County Ordinance No. 10032 was amended on 01/13/2010), it serves little function to create an additional layer of bureaucracy (and potential Copermittee liability) for the same discharges simply because they enter the MS4. It makes more sense to recognize these existing ordinances as substantially meeting the stated objective of Tentative Order Section E.2.a.(4) to instead allow these discharges to be controlled "through statute, ordinance, permit, contract, order, or similar means." In doing so,

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Copermittees are afforded greater opportunity to appropriately utilize their local water conservation ordinances, but also to augment these approaches with tools other than strict enforcement. Given the significant variety in the nature and severity of over-irrigation discharges likely to be encountered over a permit cycle, it makes sense to allow Copermittees the discretion they need to effectively deal with them. Tentative Order Section E.2.a.(4) already provides this discretion for air conditioning condensation, individual residential vehicle washing, and dechlorinated swimming pool discharges. The County sees no fundamental difference in the potential risk posed by over-irrigation discharges, and again would emphasize that the Fact Sheet/Technical Report has provided no evidence that it exists.

The County requests that over-irrigation discharges be added to Section E.2.a.(3) of the final adopted Order. Alternatively, if sufficient rationale is provided for their designation as illicit discharges, we request that they instead be added to Section E.2.a.(4) since their control through statute, ordinance, permit, contract, order, or similar means would constitute a more appropriate management response than outright prohibition.

7. Staffing and cost increases for new and expanded requirements cannot be absorbed

The County is tentatively supportive of many of the key conceptual shifts likely to occur under a re-issued permit. In particular, we agree that an increased presence in residential areas can help us to better characterize source contributions from these areas and to craft more effective approaches to managing them. We also believe that developing and fine tuning our WQIP strategies will over time result in commercial and industrial inspection programs that are more focused and efficient in addressing key watershed problems.

However, the County is compelled to support a cost-neutral permitting approach that takes advantage of increased efficiencies and prioritization to put limited resources where they will be best utilized. To comply with the current permit, the County currently spends well over $30 million each year. This is equivalent to the entire budget of our Department of Parks and Recreation. Unfortunately, our analysis of the Tentative Order indicates that the cost to comply would increase significantly. The County cannot support a permit that increases costs for which no reliable source of funding exists.

On top of the Bacteria TMDL-related costs discussed above (see item 1), other new permit costs include the following:

- Development and implementation of a residential inspection program

The Department of Public Works estimates that the County will require a minimum of two to three additional staff to carry out these inspections and conduct all necessary follow-up activities (education, enforcement, etc.) over eight WMAs and 24 Community Planning Areas.

- Increases to agricultural inspections

The Department of Agriculture, Weights, and Measures estimates that seven additional staff may be needed to conduct inspections of a wider variety of agricultural operations. This is due primarily to possible increases in inspections and complaint referrals of additional agricultural

sites, where the County's inventory may increase approximately eightfold (from 483 to more than 4,000). These increases would be responsive to updated JRMP requirements and the development and implementation of WQIPs.

- Development and implementation of an alternative compliance program (see item 3 above):

There are significant administrative costs associated with developing off-site mitigation methodology, establishing off-site locations suitable for mitigation, and establishing outside agreements with agencies to perform perpetual maintenance. Plus, there is the cost of constructing the piping from the project sites to the mitigation area (due to Tentative Order section E.3.c.(3)(a)(iv)). In addition, the taxpayer (not the developer) will ultimately be responsible for the perpetual maintenance of the piping and the off-site mitigation lands.

- Development and implementation of a retrofit program for areas of existing development:

Per Section E.5.e.(2), the County would be required to develop "a program to retrofit areas of existing development within its jurisdiction to address identified sources of pollutants and/or stressors that contribute to the highest priority water quality conditions in the Watershed Management Area." While it is not possible at this time to anticipate the specific resource implications of this requirement, it is essential that they be acknowledged. Significant ongoing costs will be incurred in developing and managing the program itself, acquiring candidate properties, designing and constructing public projects, encouraging and/or compelling the construction of private facilities, and providing long-term maintenance of privately or publicly constructed facilities (e.g., permanent treatment control facilities installed in road rights-of-way). Such changes will require additional funding and resources that are not currently available.

Collectively, these increases are beyond the County's current ability to absorb. We believe that through additional dialogue we can identify commensurate reductions in other permit requirements or areas where greater prioritization and increased efficiencies can be achieved. We are anxious to continue dialogue so that an acceptable cost-neutral approach to implementing these new permit priorities can be found.

8. Determination of minimum inspection frequencies for industrial, commercial, and municipal facilities.

Tentative Order Section II.E.5.c.(1)(a)(iv) fails to differentiate compliance inspections from operation and maintenance inspections. In particular, inspections of linear municipal facilities and associated structures should not be included as part of a requirement to annually perform onsite inspections of an equivalent of at least 20 percent of a Copermittee's combined commercial, industrial, and municipal inventory.

Section II.E.5.a.(1) requires that Copermittee source inventories include commercial and industrial sources, and the following types of municipal facilities:

(i) MS4 and related structures

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(ii) Roads, streets, and highways,
(iii) Parking facilities,
(iv) Municipal airfields,
(v) Parks and recreation facilities,
(vi) Flood management and flood control devices and structures,
- Operating or closed municipal landfills,

(vii) Publicly owned treatment works (including water and wastewater treatment plants) and sanitary sewer collection systems,
(viii) Corporate yards, including maintenance and storage yards for materials, waste, equipment, and vehicles,
(ix) Hazardous waste collection facilities,
(x) Other treatment, storage or disposal facilities for municipal waste, and
(xi) Other municipal facilities that the Copermittee determines may contribute a significant pollutant load to the MS4.

Section II.E.5.c.(1)(a)(iv) additionally requires that "[e]ach Copermittee must annually perform onsite inspections of an equivalent of at least 20 percent of the commercial facilities and areas, industrial facilities, and municipal facilities in its inventoried existing development". As such, it establishes a minimum inspection frequency that is based on each Copermittee's combined industrial, commercial, and municipal inventory totals.

Most of the facilities listed above are easily tabulated as discrete point sources (a building, a business location, etc.) and share a number of structural and operational commonalities (rooftop areas, parking lots, equipment operation, fueling, cleaning, etc.). As such, they are well-suited to the inspection requirements of Tentative Order Section II.E.5.c., which are primarily for compliance verification (assessment of BMP implementation, correction deficiencies or violations, etc.). Other facility types (streets, roads, highways, sanitary sewer collection systems, and MS4s) are fundamentally different because they consist of extensive networks of linear facilities and associated features (e.g., inlets and outlets). As such, it is impractical to inventory them as discrete point sources. Moreover, inspections of these facilities are conducted primarily for evaluating operation and maintenance needs, not for regulatory compliance. The following inventory totals are provided to illustrate how these differences in facility types apply to the County's current inventory.

<u>Facilities subject to "compliance" inspections (2,286 total "facilities")</u>

- Industrial sources (181 facilities)
- Stationary commercial sources (1,921 facilities)
- Solid waste facilities (22 facilities)
- Wastewater facilities (18 facilities)
- Road stations (21 facilities)
- Fleet maintenance facilities (27 facilities)
- Municipal airfields (4 facilities)
- Parks and recreational facilities (92 facilities)
- Office buildings and other municipal facilities (74 facilities)

Facilities subject to "maintenance" inspections (23,347 total "facilities")

- Streets, roads, and highways (1,929 linear miles)
- MS4 inlets and basins (18,974 facilities)
- MS4 linear channels (1,994 linear miles)
- Wastewater collection systems (450 linear miles)

As shown, calculating a combined total inventory across both lists by which either annual or 5-year inspection frequencies can be determined is problematic. Assuming for simplicity that each linear mile of road, MS4, or sewer collection system can be counted as a single facility, the "numbers" of these sources would outweigh all of the other discrete point sources in the first list by more than ten to one, artificially inflating the number of required annual facility inspections well beyond the apparent intent of the Tentative Order. While this would initially appear to drive inspection totals upward, it could have other unintended consequences. For example, a Copermittee could easily meet its overall targets by making comparatively minor increases to its inspections of streets, roads, highways, sewer collection systems, or MS4s. In essence, by focusing their efforts on linear municipal facilities, they could obviate the need for required inspections of other facility types. Such problems are easily remedied by separating the two sets of inspection requirements.

The County, therefore, requests that the following facility types be excluded from the requirements of Section II.E.5.c.(1)(a)(iv) to annually perform onsite inspections of an equivalent of at least 20 percent of the commercial facilities and areas, industrial facilities, and municipal facilities in each Copermittee's inventoried existing development:

- MS4 and related structures (inlets and outlets)
- Roads, streets, and highways, and
- Sanitary sewer collection systems.

This is consistent with Sections II.E.5.b.(1)(b) and (c), which make a clear distinction between general BMP implementation and those practices related to BMP operation and maintenance. We believe that the requirements of Section II.E.5.b.(1) are sufficient to ensure proper inspection frequencies for these other facilities.

9. Unfunded mandates

Permit Finding 29 (p. 9) states that the Tentative Order does not constitute an unfunded local government mandate subject to subvention under Article XIIIB, Section (6) of the California Constitution, and cites six reasons for this conclusion. Section VII-F of the Fact Sheet/Technical Report (p. F-29) provides further explanation of staff's reasoning. The County disagrees that the general discussion provided in each of these sections is sufficient to summarily dismiss the possibility that specific provisions of the final Order might in fact constitute unfunded mandates. The County also disagrees that the Fact Sheet's attempt at legal analysis is correct, or controlling of the unfunded mandate issue that is currently being litigated, and as may be litigated with regard to new provisions and requirements of the Tentative Order.

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10. Firefighting discharges

Since the County Fire Authority will be directly regulated by this permit, the County is very concerned that public funds and critical personnel may have to be spent or resourced to comply with requirements that are unnecessary, and that this will ultimately reduce the emergency personnel and funding available for essential public services. The County Fire Authority's detailed comments on permit requirements for firefighting-related discharges are included as Attachment 6.

Also attached for your consideration are several comment letters received from Community Planning and Sponsor Groups in the unincorporated area. These letters express support for the County's positions and recommendations and are included here as Attachment 7.

Again, thank you for the opportunity to participate in the development of a new permit for the San Diego Region. We look forward to continued discussion of the issues raised above. If you have questions, please contact Jon VanRhyn, Water Quality Program Manager, at (858) 495-5133, or Todd Snyder, Land Use & Environmental Planning Manager, at (858) 694-3482.

Sincerely,

RICHARD E. CROMPTON, Director
Department of Public Works

REC:cw

ATTACHMENTS:

1) Letter from Ron Roberts, Chairman, County of San Diego Board of Supervisors, to Governor Jerry Brown, dated November 9, 2012, and letter from 20 elected officials to Regional Board Chairman Grant Destache, dated November 13, 2012.
2) County Counsel letter to Catherine Hagen, Esq.
3) Geosyntec Consultants, Technical Assessment of the San Diego Beaches & Creeks Bacteria TMDL
4) Rick Engineering Cost Comparison Study, December 2012
5) County of San Diego Department of Environmental Health Comment Letter
6) County of San Diego Fire Authority Comment Letter
7) Community Planning and Sponsor Groups Comment Letters

RON ROBERTS
CHAIRMAN
SUPERVISOR, FOURTH DISTRICT
SAN DIEGO COUNTY BOARD OF SUPERVISORS

November 9, 2012

The Honorable Jerry Brown
Governor, State of California
State Capitol Building, Suite 1173
Sacramento, CA 95814

Dear Governor Brown:

On behalf of the County of San Diego (County), I would like to inform you of recent action taken by the Board of Supervisors (Board) regarding the renewal of the San Diego Municipal Stormwater Permit (Permit). The Board has voted unanimously to approve a strategy to ensure that reasonable compliance standards are incorporated into the renewed Permit now under consideration at the San Diego Regional Water Quality Control Board (RWQCB). The County is concerned that the proposed permit requirements included in the draft tentative order of the Permit would impose unreasonable costs and at the same time guarantee non-compliance with permit requirements. This is particularly true for the numeric standards that would have to be achieved to meet the objectives of the Bacteria Total Maximum Daily Load (TMDL).

The County of San Diego has been the principal permittee for the San Diego Municipal Stormwater Permit and is joined by 20 other regulated parties referred to as copermittees, including the 18 incorporated cities, the San Diego Unified Port District and the San Diego County Regional Airport Authority. This Permit is renewed every five years, and with each renewal the permittees have been required to meet more stringent and costly requirements. "Sustainable Environments" is one of the County's three Strategic Initiatives, and the County has long been a leader in promoting clean water at local beaches, bays and streams.

The County currently spends over $35 million annually to comply with existing stormwater requirements, and collectively the copermittees spend over $100 million per year. Additional compliance costs are difficult to quantify, but are also paid by the private sector. These costs would be compounded by new permit requirements, including the Bacteria TMDL, which seeks to return beaches and creeks to conditions that existed prior to urbanization within 18 years. Regional compliance costs for the Bacteria TMDL alone are estimated to be between $2.2 billion and $4.2 billion in the six watersheds that involve the County over the remaining 18 years of the 20-year compliance schedule. The County's portion of estimated compliance costs is between $286 million and $567 million. On average, this program would cost the County an additional $16 to $31 million dollars each year. These cost estimates are consistent with estimates provided in the RWQCB's own TMDL documentation, as well as estimates developed as part of TMDL load reduction plans in other regions. The state or federal government does not provide any funding to local agencies to comply with these requirements.

Despite the unrealistic price, the required limits may be unattainable and current science cannot reliably guarantee that this effort will result in permit compliance.

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Printed on recycled paper

The purpose of the Bacteria TMDL is to protect public health, as elevated bacteria levels at beaches have been shown to increase the risk of water-related illness in surfers and swimmers. However, the science used to develop the Bacteria TMDL underestimates the amount of bacteria that comes from natural sources such as birds, wildlife and natural decomposition. Since those sources of bacteria cannot be eliminated, compliance with the numeric limits in the proposed TMDL is unattainable. Additionally, bacteria are pervasive and can re-grow and multiply at a rapid rate, making them some of the most difficult pollutants to eliminate from the environment. Essentially, the Bacteria TMDL would require the impacts of over 100 years of urbanization to be reversed to pristine levels as soon as eight years from now in dry weather conditions and in less than 18 years for wet weather conditions. Above all, recent studies show that current technology is not capable of removing bacteria to levels that would meet standards, especially during rain events.

In addition to the Bacteria TMDL, the draft permit includes new unreasonable requirements for development projects that will increase costs significantly. The draft permit also includes performance standards that unnecessarily expose copermittees to third-party lawsuits.

While we necessarily focus on the specific requirements of the San Diego Municipal Stormwater Permit, we also remain concerned about developing policies at the national level where new stormwater permit requirements are expected next summer and United States Environmental Protection Agency (U.S. EPA) guidance on "waters of the U.S." could be released later this year. These represent significant additional regulatory requirements that could further impact the San Diego Municipal Stormwater Permit and increase its cost to residents and businesses in the San Diego region.

In the coming weeks the County will continue to express these concerns to the Regional Water Quality Control Board. The County urges your engagement on this issue at all levels, with the U.S. EPA, State Water Resources Control Board and RWQCB. Local government needs realistic objectives and schedules for the Bacteria TMDL, and more complete scientific analysis to ensure that resource commitments in water quality programs are justified based on the resulting benefits. Per the provisions of federal and state law, and the Maximum Extent Practicable standard established by the Clean Water Act, permit requirements should promote and ensure clean water while striking a reasonable balance in cost.

Concerns about the costs and compliance schedules for stormwater permits are shared by many jurisdictions in California and across the country. For this reason, the County is joining with other jurisdictions to bring attention to these concerns to regional water quality control boards, the U.S. EPA, and other appropriate state and federal offices. We appreciate your attention to the pending permit concerns in San Diego County, and we look forward to working with you in the months ahead to ensure that limited public funds are wisely dedicated to stormwater control. Please contact Geoff Patnoe, Director of the County of San Diego Office of Strategy and Intergovernmental Affairs, at (619) 531-5202 if you have any questions.

Sincerely,

RON ROBERTS
Chairman
San Diego County Board of Supervisors

RR:sia

County of San Diego
City of Carlsbad
City of Chula Vista
City of Coronado
City of Del Mar
City of El Cajon
City of Encinitas
City of Escondido
City of Imperial Beach
City of Lemon Grove
City of National City
City of Oceanside
City of Poway
City of San Diego
City of San Marcos
City of Santee
City of Solana Beach
City of Vista
S.D. Unified Port District

November 13, 2012

Mr. Grant Destache
Chairman
San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Re: Regional Municipal Storm Water Permit

Dear Chairman Destache:

As representatives of the jurisdictions in San Diego County that are regulated by the Regional Water Quality Control Board (Regional Board), we share deep concerns over proposed regulations in the new Regional Municipal Storm Water Permit. While we strongly believe in the mission of achieving clean water, the proposed regulations are without sound scientific merit and, if implemented, will have catastrophic negative impacts on the fiscal health of local governments and private industry.

Collectively, we are committed to the goal of improving water quality through the storm water management programs that have been developed in conjunction with the Regional Board. Current compliance efforts to reduce storm water pollution are significant and cost regional agencies more than $100 million annually. As stewards of public tax dollars and governments that are faced with having to do more with less, we are concerned that with each permit renewal cycle, the stringency and cost of the unfunded mandates continue to go beyond any practical standards of attainment and what is required by the Clean Water Act.

The Draft Regional Municipal Storm Water Permit released by the Regional Board continues to include the far-reaching Bacteria Total Maximum Daily Load (TMDL), and other additional impractical and unattainable requirements for development projects. It is estimated that the proposed Bacteria TMDL standards alone would cost between $2.2 billion and $4.2 billion for those jurisdictions that share responsibility in six of the watersheds included in the permit. The cost to private industry is unknown but it is clear that any additional costs will be passed on to already struggling and financially burdened families.

Taxpayers will be gravely impacted if this unilateral regulatory practice is allowed to move forward. Governing bodies will be forced to shift public funds away from existing programs, increase taxes or assessments, or face regulatory fines resulting from non-compliance. The Bacteria TMDL, along with the many other proposed regulations, should not be incorporated into the next Regional Municipal Storm Water Permit until we are certain that they are founded on verifiable scientific data, achievable standards, and until sufficient resources are available.

On behalf of our respective constituencies, we are requesting that the Regional Water Quality Control Board direct staff to work collaboratively with all the co-permitees and various stakeholders to draft language that makes practical sense from an environmental and economic standpoint.

Sincerely,

Chairman Ron Roberts
County of San Diego

Vice Chairman Greg Cox
County of San Diego

Mayor Matt Hall
City of Carlsbad

Mayor Cheryl Cox
City of Chula Vista

Mayor Casey Tanaka
City of Coronado

Mayor Carl Hilliard
City of Del Mar

Mayor Mark Lewis
City of El Cajon

Mayor Jerome Stocks
City of Encinitas

Mayor Sam Abed
City of Escondido

Mayor Jim Janney
City of Imperial Beach

Mayor Mary Teresa Sessom
City of Lemon Grove

Mayor Ron Morrison
City of National City

Mayor Jim Wood
City of Oceanside

Mayor Don Higginson
City of Poway

Mayor Jerry Sanders
City of San Diego

Mayor Jim Desmond
City of San Marcos

Mayor Randy Voepel
City of Santee

Mayor Joe Kellejian
City of Solana Beach

Mayor Judy Ritter
City of Vista

Admiral Lou Smith
Chairman
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KRISTEN LAYCHUS

January 10, 2013

Catherine Hagan, Esq.
San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, California 92123-4340

via Fed Ex

Re: Tentative Order R9-2013-0001

Dear Catherine:

On behalf of our client the County of San Diego, I am writing concerning some provisions in Tentative Order R9-2013-0001 that are of particular concern to the County. I respectfully ask that you review our legal position on those provisions as outlined below, and please call me to discuss if you have any questions or need further information to assist your review.

The Bacteria TMDL Resolution

The Tentative Order would incorporate elements and requirements from the Bacteria TMDL Resolution (Resolution R9-2010-0001) into the new MS4 permit for San Diego Region copermittees, including the County of San Diego. We specifically urge the San Diego Regional Board to not incorporate the Bacteria TMDL provisions in this permit renewal cycle. It is our legal position that your Board has the authority to decline the demands of other interested parties that this action be taken.

Reasons Not to Incorporate the Bacteria TMDL Into the Permit

From a recent summary by Regional Board (RB) staff, County of San Diego copermittees spend approximately $119M per year on programs to improve water quality

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in the San Diego region. Those programs have improved water quality in general and at beaches in the region. With ever-increasing knowledge gained through trial and error, and with the Watershed Quality Improvement Plan concept expected to permit existing resources to be focused in more efficient and effective ways, San Diego copermittees expect to continue the march toward improved water quality using the current level of resources. The copermittees are continually working on ways to improve water quality and have done so for over two decades. As evident in our annual expenditure and work with experts, we are committed to improving water quality.

By RB staff estimates and as confirmed by San Diego copermittees, the implementation of the Bacteria TMDL in the next permit cycle would add a magnitude of additional costs to copermittee budgets that is unsustainable using existing methods for raising general fund monies and given California's legal constraints on taxation or fees. As your Board has heard, the range of additional cost attributable to the Bacteria TMDL alone is $144M to $272M per year, meaning billions of taxpayer dollars over the compliance period.

As presentations in the adoption process have shown, given the unique challenges associated with bacteria as a constituent in stormwater, the cost-benefit analysis dictates that implementing the Bacteria TMDL at this time, as written, would be bad public policy. Studies and experience show that any magnitude of controls for bacteria, up to and including disinfectant efforts, will not consistently achieve the Resolution's numeric standards, even with the expenditure of billions of dollars. So, the sensible, logical next step is to take a hard look at the standards and assumptions of the Bacteria TMDL and devise plans to improve water quality using existing resources and as realistically achievable with today's scientific methods.

Legal Authority to Not Incorporate the Bacteria TMDL Into the Permit

As you know in 1987, Congress declared its intent to chart a different course for improving water quality flowing from MS4 systems by enacting Clean Water Act § 402 (33 U.S.C. § 1342). In establishing the "maximum extent practicable" (MEP) standard of CWA § 402(p)(3)(B), Congress recognized and enacted a different standard than the technology based requirements of CWA § 301. The MEP standard is the legal standard for stormwater compliance.

In *Defenders of Wildlife v. Browner,* 191 F.3d 1159 (1999) the Ninth Circuit held that the MEP standard of CWA § 402(p)(3)(B) *replaces* the requirements of CWA § 301(b)(1)(C) for MS4 dischargers. The *Browner* decision goes on to discuss the

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discretion vested in permitting authorities to either require strict compliance, or less than strict compliance, with water quality standards.

Our office believes that the November 12, 2010 EPA memorandum concerning the incorporation and use of numeric WQBELs in permits is not dispositive of this issue. As acknowledged in its March 17, 2011 letter, EPA is still considering whether to retain, reissue, or withdraw the 2010 memorandum. And, in the same letter, EPA acknowledges that the 2010 memorandum, "does not impose legally binding requirements on EPA, States, or the regulated community, nor does it confer legal rights or impose legal obligations on any member of the public."

With regard to the unique challenges associated with bacteria control, the science shows that consistent achievement of the Bacteria TMDL numeric standards is not possible, even with any level of expenditure. Therefore, imposing the 2010 Bacteria TMDL provisions as permit conditions would exceed the "maximum extent practicable" standard. Accordingly, we believe your Board is vested with the discretion to elect not to incorporate the Bacteria TMDL provisions at this time.

Your Board would be justified to open a process to revisit and re-examine the Bacteria TMDL assumptions in the context of its basin planning process, instead of taking the irrevocable step of incorporating the TMDL into the permit and potentially wasting valuable taxpayer dollars that could better be spent on achievable water quality improvement goals.

Receiving Water Limitations (RWL) Language

As you know, the copermittees have expressed significant concerns about third-party liability risks resulting from the Ninth Circuit's interpretation of receiving water limitation language in the L.A. Region's stormwater permit. While we appreciate the State Water Resources Control Board's willingness to take comment and review those concerns, it may take several months for the State Board to act. The Tentative Order retains language similar to the problematic language reviewed in the *NRDC* case; this leaves the County and other copermittees immediately exposed to similar litigation from third parties for violations of water quality standards. We know that several various proposals to modify RWL language have been presented at state and local levels.

We suggest a simple solution consistent with Congress' intent in enacting CWA § 402 as discussed above: simply remove the RWL language in Provision A of the Tentative Order. Federal law does not require imposition of the receiving water limitations for MS4 systems. There is precedent for this action; a number of EPA issued

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stormwater permits throughout the country do not include this language. Your Board has the discretion under CWA § 402 and *Browner* to remove the language. If EPA does not consider the RWL language to be essential to its own MS4 permitting, it seems logical that your Board is not required to include it in the new permit.

State Water Board policy supports the iterative process approach to water quality improvement, and acknowledges that water quality standards for many pollutants from MS4s cannot be met immediately. Therefore it is unrealistic and at odds with the iterative process to enact a standard that puts the third-party lawsuit gun to the head of public entities diligently spending significant time and public money pursuing water quality improvement. The permit would still include its enforceable prescriptive requirements and the WQIP features that all parties believe will focus resources in each watershed in the most productive fashion. Over the past two decades, the region has developed the knowledge and skill set to improve water quality, but understands that only through an iterative process can true progress be made.

Removal of the RWL language would eliminate the inevitable jousting over modified language proposals and the uncertainty created by its retention in light of the *NRDC* ruling. Copermittees would simply be obligated to focus on permit condition compliance, including the tasks identified in approved WQIPs, subject to RB enforcement if appropriate. Removal of the language would not create a "free pass"; to the contrary, it would encourage effective water quality monitoring and reporting that might otherwise be discouraged by the specter of third party lawsuits like those filed in the *NRDC* and other cases.

Land Development Standards/Hydromodification Issues

County Counsel concurs with the legal concerns sent to your attention in the December 19, 2012 letter from the Office of the City Attorney of the City of San Diego. The letter points out potential constitutional issues with hydromodification requirements imposed in the Tentative Order. We urge you to recommend modifying the referenced provisions to avoid the potential consequences for copermittees outlined in the letter.

The County also urges the Regional Board to amend the Tentative Order to incorporate the approved hydromodification management plan (HMP) for San Diego County into the permit, and remove provisions of the Tentative Order that are inconsistent with the HMP. As you know, the HMP was developed at significant cost to copermittees, and has only recently been implemented. Therefore, scrapping key components and changing the baseline standard for redevelopment to the questionable "pre-development" standard without further study of the effectiveness of the HMP as

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implemented is legally inconsistent with the premise upon which the HMP was required to be developed in the first instance. Our client is submitting a more comprehensive technical comment on the HMP issue for your review.

Other legal concerns with various Tentative Order provisions will be woven into the comprehensive written comments to be submitted by the County and copermittees. Because of the potential impact of the above provisions of the Tentative Order for our client, we urge you to review and revise your recommendations to the Regional Board. Our mutual goal should be a permit that realistically and responsibly advances the march toward improved water quality in the region using available existing resources. As always, thank you for your consideration.

Very truly yours,

THOMAS E. MONTGOMERY, County Counsel

By James R. O'Day

James R. O'Day, Senior Deputy

JRO/tlm
12-00802

Geosyntec consultants

Technical Assessment of the San Diego Beaches & Creeks Bacteria TMDL

County of San Diego, Department of Public Works
January 2013

Executive Summary

The purpose of this paper is to evaluate the Beaches and Creeks Bacteria Total Maximum Daily Load (San Diego Bacteria TMDL), which was adopted by the San Diego Regional Water Quality Control Board (Regional Board) on February 10, 2010, and is proposed for inclusion in Tentative Order R9-2013-0001, the draft San Diego Municipal Separate Storm Sewer System (MS4) Permit (Permit). This technical evaluation identified three fundamental weaknesses: 1) the TMDL reference approach is inappropriately applied to the TMDL compliance sites; 2) the TMDL does not adequately reflect a protection of public health; and 3) the TMDL targets are unattainable given technological and environmental constraints. In addition, while a technical peer review of the TMDL was conducted prior to TMDL adoption, that review is found here to be too limited in scope to provide adequate defense of the TMDL basis and approach.

Introduction

The County of San Diego is a co-permittee in the San Diego MS4 Permit (Tentative Order No. R9-2013-0001), which is currently in draft form but expected to be adopted in 2013. The Regional Board proposes to include requirements consistent with the San Diego Bacteria TMDL (Resolution R9-2010-0001) in the MS4 Permit, thereby making compliance with the TMDL's requirements an enforceable permit requirement.

BACKGROUND

The California Ocean Plan and the San Diego Region Basin Plan (for inland waters) establish beneficial use designations (such as water contact recreation, or REC-1) and associated water quality objectives (WQOs) for marine beaches, estuaries, bays and freshwater bodies. The stated goal of the San Diego Bacteria TMDL is to protect human health and allow for water contact recreation at the 20 beach and creek segments in San Diego and southern Orange Counties. The TMDL defines achievement of the REC-1 beneficial use through attainment of WQOs, which are expressed as concentrations of bacterial indicators – total coliform, fecal coliform, and Enterococcus. The REC-1 WQOs are expressed as both single sample maximum (SSM) and geometric mean (GM) values.

Geosyntec consultants

Following adoption by the Regional Board, the TMDL became effective on April 4, 2011, upon approval by the State Water Board, Office of Administrative Law. The TMDL sets numeric compliance limits, or Wasteload Allocations (WLAs), for MS4 co-permittees based on a reference system approach. To account for natural sources of bacteria, this approach allows an identified percentage of samples to exceed the REC-1 WQOs based on observed exceedance frequencies at an undeveloped "reference" beach. The reference beach used in this TMDL is Leo Carrillo Beach in Los Angeles County. The TMDL's MS4 WLAs are expressed as allowable exceedance frequencies (AEFs) for any of the three SSM indicator bacteria WQOs, or 22% during wet weather (i.e., 22% of "wet weather" water samples are allowed to exceed any of the SSM WQOs) and 0% during dry weather, and 0% AEF of the GM during dry weather (i.e., no allowed exceedances). A "wet weather" day is defined in the TMDL as a day with rainfall of 0.2 inches or greater and the following 72 hours. All other days are treated as dry weather.

PURPOSE

The purpose of this white paper is to evaluate the TMDL based on a review of available data and relevant studies. This critical evaluation is structured into four fundamental questions: is the TMDL reference approach applied appropriately, does the TMDL reflect public health protection, are the TMDL MS4 WLAs attainable, and was the peer review sufficient?

1. Is the TMDL Reference Approach Applied Appropriately?

ALLOWABLE EXCEEDANCE FREQUENCIES ARE NOT APPROPRIATELY SET

To account for natural sources of bacteria, the San Diego Bacteria TMDL allows an identified percentage of samples to exceed REC-1 WQOs based on observed exceedance frequencies at an undeveloped "reference" beach. The "reference" beach used to set allowable exceedance frequencies (AEFs) for the San Diego Bacteria TMDL is Leo Carrillo Beach in Los Angeles County. MS4 WLAs are expressed as AEFs for three indicator bacteria (fecal coliform, total coliform, and Enterococcus) WQOs as follows:

- 22% AEF during wet weather[1] (i.e., 22% of "wet weather" water samples are allowed to exceed any of the SSM WQOs);

[1] A "wet weather" day is defined in the TMDL as a day with rainfall of 0.2 inches or greater and the following 72 hours. All other days are treated as dry weather.

- 0% AEF of the SSM during dry weather;
- 0% AEF of the GM during dry weather.

The TMDL inappropriately applies the same AEFs to all compliance points, regardless of their beach type (e.g., open beach or lagoonal outlet), waterbody type (e.g., beach or stream), or watershed size. Enclosed lagoonal outlets have higher AEFs than open beaches due to limited flushing and stagnant water, nutrient and organic rich sediments and vegetation that harbor bacteria, and huge densities of birds and other wildlife, due to the high quality habitat. Freshwater streams are expected to have higher AEFs than marine beaches since beaches are sampled at "point zero", or in the mixing zone (where the discharge from the storm drain or stream initially mixes with the ocean water, resulting in dilution), and because streams carry higher suspended sediments, which harbor bacteria. For this reason, watershed size is expected to influence beach AEFs since large watersheds have greater discharge, and therefore less surfzone dilution. To demonstrate this influence, a 2006 Southern California Coastal Water Research Project (SCCWRP) monitoring study at Southern California reference beaches (Schiff et al, 2006) found that exceedance frequencies of bacteria WQOs in wet weather were greater in large (>100 km^2) watersheds than in medium (28-56 km^2) watersheds or small (3-12 km^2) watersheds. The Los Angeles Regional Board has acknowledged some of these factors in setting AEFs for various bacteria TMDLs. The Santa Clara Estuary, for example, has a wet weather SSM AEF of 30%, which is higher than that of other waterbodies due to its enclosed nature, which supports bacteria regrowth and natural sources. The Arroyo Sequit watershed, which drains to the Leo Carrillo reference beach, has a drainage area of approximately 31 km^2, placing it in the "medium watershed" category. For reference, the San Luis Rey River and San Diego River watersheds (two watersheds affected by the San Diego Bacteria TMDL) are 1,500 and 1,100 km^2, respectively, putting them in the "large watershed" category, and suggesting that TMDL compliance points at their outlets should have higher AEFs. AEFs could be more appropriately set to better reflect the watershed-specific characteristics of the regulated water bodies.

The San Diego Bacteria TMDL does not allow any exceedances during dry weather, which is inconsistent with both the reference watershed datasets and the Los Angeles bacteria TMDLs. The San Diego Bacteria TMDL requires a 0% SSM AEF during all dry weather conditions, while all Los Angeles TMDLs

allow a higher dry weather SSM AEF, in some cases by separating summer-season dry weather from winter-season dry weather. In fact, based on review of recent monitoring data from the Leo Carrillo reference beach, Los Angeles beach bacteria TMDLs were modified in 2012 to increase the winter-season dry weather AEF from 3% to 10%. Furthermore, Geosyntec analysis of Leo Carrillo reference beach data from 2004 through 2011 shows an average SSM exceedance rate of 9% during summer-season dry weather, further challenging the basis for a 0% dry weather AEF in the San Diego TMDL. Table 1 compares dry weather single sample AEFs in the San Diego Bacteria TMDL with other Bacteria TMDLs adopted in the Los Angeles region.

Table 1. Bacteria TMDL Dry Weather Single Sample Allowable Exceedance Frequencies

Waterbody	Allowable Exceedance Frequency (%)	
	Winter Dry	Summer Dry
Los Angeles Region TMDLs		
Santa Monica Bay Beaches (reopened)	10%	0%
Malibu Creek (reopened)	1.6% (all dry weather)	
Los Angeles River	1.6% (all dry weather)	
Ballona Creek (reopened)	1.6% (all dry weather)	
Santa Clara River	1.6% (all dry weather)	
Santa Clara River Estuary	13.4%	4.7%
Malibu Lagoon (reopened)	10.4%	0%
Ballona Estuary (reopened)	10.4%	0%
San Diego Region TMDL		
San Diego 20 Beaches and Creeks (for comparison)	0% (all dry weather)	

The San Diego TMDL's use of AEFs as the compliance metric is also inconsistent with the Los Angeles reference approach (which uses allowable exceedance *days*) and, as a result, the wet weather WLAs are often unattainable at the reference beach itself. The Los Angeles TMDLs use the average wet weather reference beach exceedance frequency with the number of local wet days in the 90th percentile wet year to calculate the number of allowable exceedance days (AEDs)[2]. By doing this, the Los Angeles Regional Board has established a compliance metric that is only exceeded at the reference beach during 10% of years, and that accounts for the influence of year-to-year rainfall variability. In contrast, by using the average wet weather exceedance frequency as the compliance metric, the San Diego Bacteria TMDL

[2] The San Diego Bacteria TMDL also does this, but ultimately sets AEFs as the compliance metric, making its AED calculations unused and meaningless.

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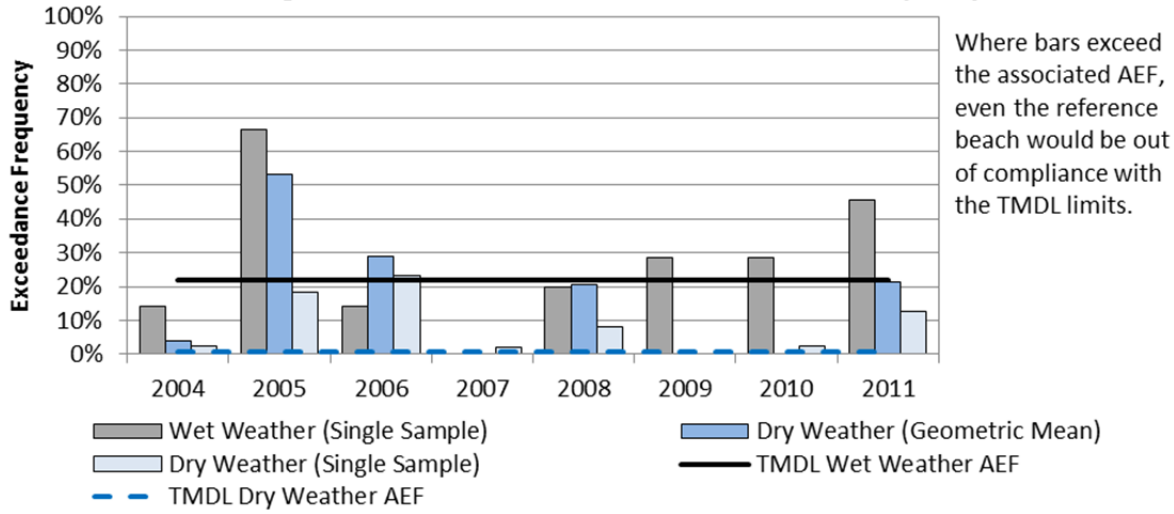
establishes a metric that is exceeded at the reference beach during approximately half of the years (since they are taking the average value).

Reference-based compliance metrics could be set such that the reference beaches and creeks consistently meet the TMDL WLAs. Geosyntec analysis of Leo Carrillo monitoring data from 2004 through 2011 demonstrates that the average wet weather SSM exceedance frequency (28%), the average dry weather 30-day GM exceedance frequency (16%), and the average dry weather SSM exceedance frequency (10%) are higher than the AEFs defined in the TMDL (22%, 0%, and 0% respectively). Figure 1 shows the annual exceedance frequencies (or percent of samples that exceed the SSM WQOs) for the Leo Carrillo reference beach compared to the TMDL AEFs. During these eight years of monitoring, this reference beach would have exceeded the TMDL's single sample AEFs in 4 of 8 years during wet weather and 7 of 8 years during dry weather. The reference beach also would have exceeded the GM AEF in 5 of 8 years. These results demonstrate that the TMDL AEFs are exceeded during most years at the reference beach itself. Furthermore, in its 2008 report (Tiefenthaler et al), SCCWRP evaluated bacteria concentrations in reference streams during dry weather. The study results demonstrated that bacteria levels at the reference stream sites fluctuate seasonally, annually, and from site to site, often with measured exceedance frequencies above the AEFs. Therefore, currently available reference beach and stream datasets could be used to set more appropriate TMDL compliance metrics.

Figure 1. Leo Carillo Annual Bacteria Exceedance Frequency



Notes:
1. 30-day Rolling GM - Geometric mean calculation performed every week, on the dry weather samples within the previous 30-days period, if 5 or more samples have been taken in the 30-day period.

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THE TMDL REFERENCE SITE IS NOT REPRESENTATIVE OF THE SAN DIEGO REGION

The Los Angeles region's reference beach, Leo Carrillo, which was used to set the San Diego TMDL AEFs, is not located in the San Diego region. Temperature, rainfall, and vegetation type and density may vary significantly by geographic region. These factors are known to influence bacterial concentrations in environmental samples. Therefore, the AEFs developed based on Leo Carrillo may be very different than the AEFs developed for a San Diego reference beach, and the same may be true of San Diego reference streams. This hypothesis is supported by an extensive SCCWRP study, completed between 2004 and 2006, where multiple reference beaches were monitored (Schiff et al, 2006). This study, which has been referenced in several Southern California bacteria TMDLs, shows higher wet and dry weather exceedance frequencies at the two San Diego reference beaches (San Onofre and San Mateo) than at Leo Carrillo (Table 2).

Table 2. Average exceedance frequencies for key reference beaches

Season		SD TMDL	Leo Carrillo	San Onofre[1]	San Mateo[1]
Wet Weather (Single sample)		22%	28%	30%	30%
Dry Weather (GM)		0%	16%	-	-
Dry Weather (Single sample)	Winter	0%	9%	7%	20%
	Summer			0%	9%

[1]Exceedance frequencies at these beaches are believed to be based on SSMs for dry weather; however the report did not describe the analysis method used.

WET DAY DEFINITION IS UNSUPPORTED

The TMDL inconsistently uses a wet weather definition of 0.2 inches of rainfall for compliance purposes, but adopted the Leo Carrillo reference beach AEFs that were determined using a 0.1 inch definition. Table 3 summarizes the AEFs defined in Tentative Order R9-2013-0001, based on the San Diego Bacteria TMDL, as well as the average exceedance frequencies calculated between 2004 and 2011 at the Leo Carrillo reference beach. These results are presented based on two methods: 1) assuming wet weather is defined as 0.1 inches (per the Los Angeles Regional Board and Leo Carrillo reference beach) and 2) assuming wet weather is defined as 0.2 inches (per the San Diego Regional Board). As shown, the AEFs observed using the 0.2 inches definition are higher (10-31%) than those observed using the 0.1 inches definition (9-28%). This suggests that the TMDL AEFs are biased lower, or resulting in more stringent AEFs, than they would be if the 0.2 inches definition was accurately applied.

Table 3. Leo Carrillo average exceedance frequencies based on different wet weather definitions, 2004-2011

Season	SD TMDL AEFs	Average Observed Exceedance Frequency at Leo Carrillo Reference Beach	
		0.1 inch	0.2 inch
Wet Weather (Single sample)	22%	28%	31%
Dry Weather (GM)	0%	16%	18%
Dry Weather (Single sample)	0%	9%	10%

In addition, the San Diego Bacteria TMDL's wet day definition (0.2 inches) inappropriately skews the number of dry days high (and noting that dry days have no allowed exceedances) and wet days low (whereas wet days are allowed a number of exceedances).

To further evaluate the 0.2 vs. 0.1 inch definition, an analysis was performed correlating rainfall data from the San Diego County ALERT Flinn Springs gauge (32.8464N 116.8636W, San Diego County) and streamflow data from the USGS Los Coches Creek gauge (11022200, Lakeside, CA) from October 2007 to September 2012 (5 water years). Los Coches Creek is a small tributary of the San Diego River with a drainage area of 12.2 square miles. This pair of gauges was selected because the Flinn Springs rain gauge reasonably represents the Los Coches Creek drainage. Of the 12 storms that occurred during this period that produced rainfall depths between 0.1 inches and 0.2 inches, all 12 resulted in rainfall-induced excess runoff to the creek, as defined by a temporary increase in flow rate of at least 50% above pre-event base flow. The increased flows for these storms averaged 840% above baseflow with a range between 74% and 2500%. Therefore, 0.1 inches is a more appropriate threshold value for defining TMDL wet days in the San Diego region.

TMDL SHOULD REFLECT APPROPRIATE REC USE CATEGORIES

By assuming a "designated beach" usage frequency (the highest REC use category) for all beaches and creeks, the TMDL applies the most stringent REC-1 Enterococcus WQOs from the Basin Plan, or 61 and 104 MPN/100mL for freshwater and saltwater, respectively. However, Chapter 7 of the Basin Plan states that the "designated beach" category may be over-protective of water quality for the impaired freshwater creeks because of their infrequent recreational use, and that these waters may be better represented by the "moderately to lightly used areas" category, which has an Enterococci freshwater REC-1 SSM WQO of 108 MPN/100mL. The San Diego Regional Board has indicated in the TMDL that they may be open to amending the Basin Plan for these lower usage water bodies, and the MS4 co-permittees would likely support this action, which would more accurately reflect freshwater REC uses in the region. Furthermore, a lower REC use intensity or alternatively a REC use suspension could be considered to limit the applicability of REC-1 bacteria WQOs during wet weather when creek access is rare and often unsafe due to high flows. Such Basin Plan Amendments have been approved in the Los Angeles and Santa Ana regions.

In addition, the TMDL applies reference beach AEFs to San Diego creeks and rivers; however, these AEFs were developed based on a 104 MPN/100mL Enterococcus WQO (along with other indicator bacteria WQOs), whereas the TMDL then applies this AEF to a freshwater WQO of 61 MPN/100mL. As a result, the conservatively low AEFs are compounded with the conservatively low WQO, again resulting in unnecessarily low TMDL WLAs. Based on the Leo Carrillo reference beach data that is used to develop the TMDL AEFs, using a 61 MPN/100mL WQO for Enterococcus (along with other indicator bacteria WQOs) the site's WQO exceedance frequency is 13% and 33% for dry and wet weather, respectively. Therefore, the San Diego Bacteria TMDL could use these percentages as the basis for their freshwater AEFs if the 61 MPN/100mL threshold is kept. Another potential solution would be to use USEPA's 2012 recommended REC criteria for both freshwater and saltwater, which is 35 CFU/100mL Enterococcus as a geomean and 130 CFU/100mL as a 90th percentile Statistical Threshold Value. Notably, USEPA REC 2012 criteria guidance also now allows site-specific criteria to be developed where appropriate based on study approaches such as Quantitative Microbial Risk Assessment.

SAN DIEGO REFERENCE WATERSHED STUDY

In its response to comments on the San Diego Bacteria TMDL (TMDL Appendix V), the Regional Board recognized that a San Diego reference watershed is needed, stating: *"For these bacteria TMDLs, the San Diego Water Board decided to use the 22 percent wet weather exceedance frequency as an initial allowable exceedance frequency, with the expectation that a region specific or multiple watershed specific allowable exceedance frequencies would be developed as additional data were collected in reference systems identified for the San Diego Region"* (San Diego Regional Board, 2010).

The San Diego and Orange County MS4 Co-permittees are currently partnering with Caltrans, with technical assistance from SCCWRP, to fund a local reference study that will provide data much more appropriate to the water bodies regulated by the San Diego Bacteria TMDL. For example, water body-specific AEFs could be determined for reference beaches, creeks, and enclosed lagoonal outlets, rather than applying AEFs derived for one reference beach to all three water body types. AEFs could also be determined for reference watersheds of varying sizes, rather than applying AEFs derived for a medium watershed to all other size watersheds. AEFs could also be derived using the same wet weather definition as will be used for compliance assessment purposes, resulting in greater scientific validity of the compliance metrics. Lastly, it is anticipated that local hydrologic, geologic, and environmental (freshwater vs. marine water and flora/fauna) factors may result in AEFs more appropriate for local water bodies than those derived for the Leo Carrillo reference beach. Therefore, local AEFs would be expected to improve upon the limitations mentioned above.

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2. Does the TMDL Reflect Public Health Protection?

USEPA REC CRITERIA ACKNOWLEDGE THAT INDICATOR BACTERIA ARE NOT PREDICTIVE OF HUMAN HEALTH RISK AT STORMWATER-DOMINATED WATERS

Indicator bacteria are not themselves pathogens, or illness-causing microorganisms. Rather, indicator bacteria are used as a proxy for gastrointestinal (GI) illness risk because of their presumed correlation with human fecal waste, which is presumed to carry pathogens and is therefore presumed to generate illness as a result of body contact recreation. However, this inference chain breaks down for recreational waters -- like the San Diego Bacteria TMDL waterbodies -- that are impacted by urban runoff rather than municipal wastewater effluent, since urban runoff carries many non-human (and much less pathogenic) sources of indicator bacteria, such as from pets, birds, other wildlife, plants, and soils or sediment. Recent epidemiology studies (i.e., studies that "measure" swimmer illness rates via post-activity surveys) and Quantitative Microbial Risk Assessments (QMRA) (i.e., studies that calculate swimmer illness rates based on measured pathogen concentrations in recreational waters and using known dose-response relationships) support this understanding. USEPA's 2012 REC criteria recommendation also acknowledges this limitation for urban runoff-impacted waters, and as a result they now formally allow epidemiology and/or QMRA studies to be used to develop site-specific criteria where the default REC criteria are inappropriate. The San Diego Bacteria TMDL and MS4 Permit could acknowledge this fundamental weakness by refining the WLAs as possible based on currently available information from USEPA and allowing site-specific criteria to be developed through stakeholder-led special studies.

Bacteria WQOs have historically been derived from epidemiological studies conducted in recreational waters impacted by municipal wastewater effluent. Experts on bacteria water quality in California have suggested that an unclear relationship exists between illness and bacteria from non-point sources, supporting the finding that the application of relationships based on epidemiological studies conducted in the 1970s for effluent-impacted water bodies may be inappropriate for recreational waters (Boehm et al. 2009). Other recent studies have also demonstrated that the traditional bacterial indicators, fecal coliform and total coliform in particular, show a weak correlation with illness in stormwater-dominated waters. For example, as part of the National Epidemiological and Environmental Assessment of Recreational water (NEEAR) program, the USEPA most recently conducted epidemiological studies at an urban runoff-impacted beach in South Carolina. No statistically significant relationship between Enterococcus and GI illness was observed at Surfside Beach (USEPA, 2010), which was hypothesized to be due to either the lack of human inputs or

> The USEPA 2012 REC Criteria include only Enterococcus and *E. coli* (latter for freshwater only). These were found to be better indicators of public health than total and fecal coliforms. The USEPA also recommends the use of the GM and STV, not SSMs.

the low bacteria densities observed. A 2007 epidemiology study at Mission Bay (Colford et al) did not find any association between illness incidence and traditional fecal indicators (total coliform, fecal coliform, and Enterococcus). A four-year study conducted at 45 stormwater outfalls in Milwaukee found no correlation between E. coli or Enterococcus to the human Bacteroides genetic marker, even though all tested outfalls had Bacteroides detected in at least one sample (Sauer et al, 2011). The study further suggested that fecal indicators may be of little use for prioritizing efforts to protect human health in urban areas where numerous non-human sources of fecal pollution exist. A 2010 study (Fleischer et al) conducted at a recreational marine beach with no known point source inputs concluded that "there was no dose-response relationship between gastroenteritis and increasing exposure to Enterococci, even though many current water-monitoring standards use gastroenteritis as the major outcome illness." Other literature suggests that total coliform and fecal coliform concentrations do not correlate as well as Enterococcus with human illness rates in recreational waters (Cabelli 1983; Cabelli et al., 1982). Wade et al. (2003) conducted a scientific review of 27 studies evaluating the association between microbial indicators of recreational water quality and GI illness. The studies found that overall illness rates were better correlated with Enterococci in marine waters and with *E. coli* in freshwaters than with total coliform and fecal coliforms. Therefore, recreational waters that are not impacted by effluent require very careful application of bacteria WQOs (otherwise they create a compliance burden without providing any real human health benefit), and allowances for site-specific adjustments.

The recently finalized 2012 USEPA Recreational Water Quality Criteria Report states: *"Scientific advancements in microbiological, statistical, and epidemiological methods have demonstrated E. coli [for freshwater] and Enterococci [for marine sites] are better indicators of health than the previous indicators, total coliforms and fecal coliforms"* (USEPA 2012). This is consistent with USEPA's Ambient Water Quality Criteria for Bacteria (1986) which states: *"The freshwater studies confirmed the findings of the marine studies with respect to Enterococci and fecal coliforms in that densities of the former in bathing water showed strong correlation with swimming associated gastroenteritis rates and densities of the latter showed no correlation at all…. E. coli is the most fecal specific of the coliform indicators; and Enterococci, another fecal indicator, better emulates the virus than do the coliforms with respect to survival in marine waters"* (USEPA, 1986). Neither REC criteria (1986 or 2012) have been adopted by the California State Water Resources Control Board or the San Diego Regional Board. Given their weak link to public health, total coliform and fecal coliform WQOs could be removed from the San Diego Bacteria TMDL.

In the same 2012 document, USEPA further expresses that SSMs are overly conservative, statistically incorrect, and do not correlate with the same level of risk associated with the GM criteria. For this reason, they recommend replacing the 104 cfu/100mL SSM with the 130 cfu/100mL statistical threshold value (STV), or 90th percentile value (i.e., 10% of samples are allowed to exceed this). The STV corresponds to the same level of health protection as the GM, which was set based on observed illness rate correlations. Use of the STV would also increase consistency between states, which the USEPA has

encouraged. In fact, even the San Diego Regional Board, in their Peer Review issue #9, acknowledge that, "the GM is more appropriate [for dry weather conditions] since this value likewise represents average conditions over 30 days." Inconsistent with Regional Board staff responses to peer reviewer comments, the SSM limit was included for all weather conditions in the adopted TMDL and draft permit.

URBAN RUNOFF BEACH EPIDEMIOLOGY STUDIES SHOW A WEAK CORRELATION BETWEEN BACTERIA CONCENTRATIONS AND HUMAN ILLNESS

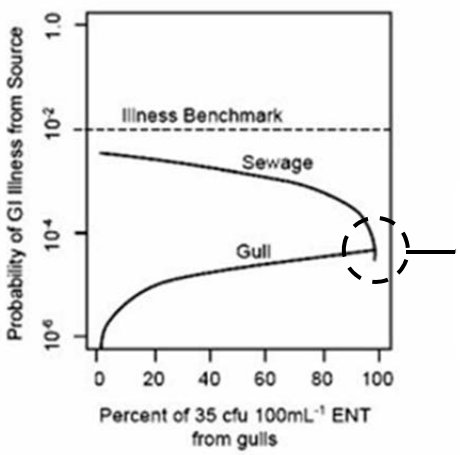
Bacterial indicators, even *E. coli* and Enterococcus as recently recommended by USEPA, have been shown to have a weak (or nonexistent) correlation with human illness rates in stormwater-dominated waters, suggesting that WQOs based on these indicators may not accurately reflect public health as intended. Epidemiological results from the SCCWRP Pacific Coast Water Quality Study at Surfrider Beach in Malibu show increased illness rates for swimmers, although no relationship between illness and bacteria was observed (Arnold et al, draft, 2012). This is perhaps due to bather shedding of skin fungus and fecal pathogens (Elmir et al., 2007; Plano et al., 2011). Many epidemiological studies have similarly found no or very minor correlation between bacteria concentrations and illness rates associated with swimming in receiving waters impacted by non-point sources of bacteria. For example, a 2007 study conducted in Mission Bay in San Diego by Colford et al. found no associations between traditional bacteria concentrations (total coliforms, fecal coliforms, and Enterococcus) and illness. A number of other studies conducted in coastal water bodies in Southern California have also shown a lack of correlation between bacteria and human pathogens (Noble et al., 2006; Rajal et al., 2007; Boehm et al., 2003; Choi & Jiang 2005; Jiang & Chu, 2004a). Moore et al (2007) and Imamura et al (2011) found that Enterococcus in particular can originate in plants and kelp, thereby questioning the presumed human health linkage for urban runoff-impacted receiving waters. A recent epidemiology study in Dana Point, conducted at Doheny State Beach, which frequently exceeds bacteria WQOs, found that swimmer illness rates were not correlated to bacteria concentrations at any time except when a creek berm was open (Colford et al., 2012). Doheny State Beach is located at the outlet of the San Juan River, which is separated from the ocean by a sand berm for most of the dry season. The San Juan River is impacted by human sources, as evidenced by the consistent correlation of bacteria and human waste markers in the creek (McQuaig et al., 2012) and the fact that a municipal wastewater treatment plant discharges disinfected effluent into the creek less than a mile upstream of the outfall. On the ocean side of the berm, however, no consistent correlations were found between bacteria and human waste markers (McQuaig et al., 2012), suggesting that the dry weather bacteria exceedances at this beach may often be caused by sources other than those of human-origin when the berm is not overtopped. In all three recent Southern California beach epidemiology studies, the additional highly credible gastrointestinal illnesses (HCGIs) observed among swimmers (i.e., illnesses beyond those measured in the non-swimmer control group) were consistently below the USEPA's tolerable illness rate (up to 3.6%) that forms the basis for its REC criteria. This was even true for Doheny Beach with the creek berm open, which was the only beach and condition where an Enterococcus-illness association was observed (no illness

associations for total or fecal coliform were observed at any of the beaches). Therefore, while indicator bacteria exceedances persist at these three Southern California beaches, measured swimmer illness rates are low and consistently meet USEPA's allowed levels. The San Diego Regional Board could therefore safely increase REC water quality objectives and still protect public health at creeks and beaches.

USEPA QMRA STUDIES SHOW RECREATIONAL OBJECTIVES ARE OVERLY CONSERVATIVE FOR SITES WITH MINIMAL HUMAN BACTERIA SOURCES

Recent USEPA Quantitative Microbial Risk Assessment (QMRA) studies (Soller et al 2010 and Schoen et al 2010) also indicate that REC objectives, specifically the Enterococcus GM, correspond to swimmer illness rates that are well below USEPA's tolerable levels at beaches with minimal human bacteria sources. Applying the 35 MPN/100mL limit at non-wastewater impacted beaches is a conservative (overly stringent) approach since recent peer-reviewed QMRA work by USEPA's contractor (Soller et al 2010) and USEPA (Schoen et al 2010) shows that the 35 MPN/100mL limit can be greatly increased at beaches where bacteria sources are primarily non-human, while still being protective of USEPA's gastrointestinal illness benchmark, as shown in Figure 2 from USEPA (Schoen et al 2010). Schoen states: *"The dominant source of fecal indicator at a recreational beach may not be the source of dominant risk."* This fact was recently acknowledged by USEPA REC criteria and QMRA experts at the November 28-29 State of the Science Workshop at SCCWRP, organized by SWRCB staff and the California Beach Water Quality Workgroup. So, while there are non-negligible risks from non-human fecal sources, for the same Enterococcus levels, these risks are much lower than those from human waste, which are the basis for default REC criteria. Therefore, if human sources are found to be very low or not detected, Enterococcus GM criteria can be safely increased[3].

[3] While used in the California Ocean Plan and San Diego Basin Plan, total and fecal coliform and SSM maximum objectives are no longer used in current USEPA REC criteria and are not associated with swimmer illnesses, therefore they are not mentioned here.



[Low illness rate sum, where Enterococcus is primarily from gull sources rather than human sewage.]

Figure 2. Comparison of median illness risk for adults when total ENT concentration (at 35 CFU /100mL) is attributed to a mixture of primary POTW effluent (sewage) and seagull feces (gulls) (Schoen et al 2010), of USEPA.

STUDIES SHOW THAT NATURAL SOURCES CONTRIBUTE SIGNIFICANTLY TO BACTERIA LEVELS, BUT PRESENT LOW HUMAN ILLNESS RISKS

Natural sources of bacteria, which present much lower human illness risks compared to human fecal sources, have shown to contribute to WQO exceedances at many Southern California sites. Table 4 summarizes several scientific studies that have identified and observed natural sources of bacteria, including plants, algae, soil, beach wrack, insects, and animal feces (especially birds). In fact, a very recent study conducted by SCCWRP and the San Diego MS4 co-permittees (Griffith and Ferguson, 2012) at Moonlight State Beach in Encinitas and Rock Pile Beach in La Jolla observed that at Moonlight Beach, *"the distribution of enterococci species and strains found in the creek and the storm drain system during the 22 week sampling period were phenotypically most similar to species and strains found among natural sources as compared to those present in sewage."* The *Bacteroides* marker was not found in any of the creek/stream or beach samples, suggesting that "human fecal contamination may not have been a significant source of Enterococci to either storm drain during the study period." In combination, these studies provide further evidence that natural sources are indeed significant contributors of indicator bacteria in Southern California recreational waters, while not likely contributing to an increased health risk.

Table 4. Summary of findings on natural sources of bacteria

Finding	Reference(s)
Non-anthropogenic sources of bacteria confirmed, potentially contributing to exceedances.	Imamura et al 2011, Izbicki 2012b
Sand, sediment, and wrack can serve as reservoirs for bacteria.	Imamura et al 2011, Izbicki et al 2012b, Lee et al 2006, Ferguson et al 2005, Grant et al 2001, Griffith 2012, Litton et al 2010, Phillips et al 2011, Jiang et al 2004b, Sabino et al 2011, Weston Solutions 2010
Enterococci include non-fecal or "natural" strains that live and grow in water, soil, plants, and insects.	Griffith and Ferguson, 2012, Griffith 2012, Litton et al 2010, Weston Solutions 2010, Izbicki et al 2012b, Weisberg et al 2009
Lagoonal sediments have been shown to harbor nutrients, which when released may encourage regrowth of bacteria.	Sutula et al 2004, Weisberg et al 2009, Surbeck et al 2010

Bacterial regrowth can limit the ability of an MS4 to comply with the WQOs for a number of reasons. First, bacteria concentrations measured in impacted watersheds may be a result of actively growing, possibly environmental (rather than anthropogenic) communities within sediments or storm drain systems rather than a result of human fecal inputs. In addition, regrowth may lead to a decoupling of bacteria from pathogens, reducing the potential for bacteria concentrations to reflect risk of human illness (Litton et al 2010). The 2012 San Diego SCCWRP study also found that the naturally occurring bacteria species were apt to form biofilms on concrete surfaces, such as in storm drains, ultimately leading to sloughing and downstream release over time. These studies suggest that regrowth is a relatively uncontrollable source that, while potentially contributing to WQO exceedances, are unlikely to contribute increased risks to human health.

3. Was the Peer Review Sufficient?

In 2010 the San Diego Regional Board solicited two experts, Dr. Patricia Holden from University of California (UC) Santa Barbara, and Dr. Kara Nelson from UC Berkeley, to provide peer review of the wet and dry weather TMDL modeling approaches. Both are highly respected research scientists and academics. Dr. Holden is an expert on source tracking method development and testing, while Dr. Nelson is an expert on removal and inactivation of pathogens as well as vegetated treatment systems. While both researchers are highly respected in their fields, neither are expert practitioners on bacteria control technology selection or performance. Therefore, their approval of the TMDL should not reflect on the technical feasibility of meeting the TMDL limits.

The following are our specific comments on the expert peer review and San Diego Regional Board responses:

a. *Other sources of bacteria*. In peer review topic #2 (use of wet weather model to simulate fate and transport of bacteria, and to calculate TMDL, to affected beaches and creeks), the reviewer raised the concern that "…the resuspension and erosion of sediments in water channels during storm events may be an important source of indicator bacteria that is not accounted for in the current model." Although the Board responds that, "the association of bacteria to sediments in the stream channels and processes of settling and resuspension are important considerations, and the LSPC model includes capabilities for the simulation of these processes if data becomes available to define modeling assumptions to facilitate model calibration", a peer-reviewed article co-authored by the expert reviewer was published on this exact topic in 2003 (Steets and Holden, 2003).

b. *Reference watershed.* In the peer review topic #3 (selection of Los Angeles watershed as a "reference" for background loading of bacteria in the San Diego Region during wet weather), it was noted by the reviewer that, "the Implementation Plan should require that one or more appropriate reference watersheds are identified and characterized for the San Diego region, and that these data are used to determine the TMDLs." This comment supports our opinion, expressed earlier in this paper, that a San Diego reference beach should be used to determine the final TMDL. The Board's response includes information that (1) measurements were based on the 2004-2005 winter season, (2) a single WQO was exceeded 27% of the time, on average across the four reference beaches evaluated, and (3) acknowledges that natural process do generate bacteria loads in both reference and urbanized systems. Although the reviewers were not provided an opportunity to respond to these items, we are concerned that (1) this response is based on only one wet season, while year to year variability has been illustrated at a reference beach per Figure 1, (2) if a 27% exceedance rate was observed across the four "local" reference beaches, why was 22% selected as the wet weather AEF?, and (3) natural source contribution processes occur year round, including during dry weather, therefore dry weather exceedances should be allowed.

c. *SSM objectives.* The use of SSM objectives (peer review topic #4) was questioned as follows, "…given that rainfall events subject the watersheds to more variability in flow and load, the use of a GM for wet weather seems more practical." The San Diego Regional Board responded, "The GM value does not evaluate peak loads at short time intervals because values are calculated over several weeks' time. Because the model used for wet weather analyzes high flow and loads, which are short-term events, the numeric target must likewise characterize risk from short-term events. Therefore the SSM WQOs were used." However, the comment was not regarding long term risk or short term risk, it was referring to the variability during individual storm events making it difficult for a single sample to accurately reflect the risk. The response did not adequately address the issue of variability in defending the use of SSM objectives. This

reviewer comment is further supported by the 2012 USEPA REC criteria guidance, which does not recommend SSM for REC use protection.

d. *Assumptions concerning regrowth*. Peer review topic #10 (reasonableness of assumptions for dry weather modeling) prompted the reviewer to comment, "I agree that given the lack of data on the occurrence of bacterial regrowth in the Southern California region, however, it is not possible [to] include regrowth in the model for dry weather flows. However, regrowth has been demonstrated in tidally-influenced river sediments in Florida…Thus, regrowth should be recognized as a potential source of error, and should regrowth be documented in the region in the future, it may need to be incorporated into the modeling framework." The Griffith and Ferguson (2012) SCCWRP study has since demonstrated regrowth in the region. Also, although not directly identified by the reviewer, the model assumes that 100% of the existing load comes from MS4 discharges, while significant reference stream/beach data were available to demonstrate otherwise (e.g., SCCWRP Technical Report #542, "Fecal indicator bacteria (FIB) levels during dry weather from Southern California reference streams" [Tiefenthaler et al, 2008]). Therefore, we suggest the following: 1) Reopen the TMDL and remodel to include regrowth and other natural sources, 2) Use the model results to set MS4 compliance metrics (e.g., load based-metrics), and 3) Use the new model to evaluate whether AEFs are consistently achievable through MS4 load reductions, or whether instream regrowth, sediment resuspension, and other natural processes/inputs might prevent receiving water compliance with the WQOs even with substantial MS4 load reduction.

e. *Lagoons and estuaries.* The reviewer commented on peer review topic #11 (location of critical points for TMDL calculation) that, "where small estuaries or lagoons separate the creek mouth from the coastal ocean, they should be considered in this process." The San Diego Regional Board responded that, "the Board recognizes that small estuaries and lagoons provide habitat for wildlife, and therefore can be a significant source of bacteria. For this reason, systems with estuaries or lagoons were not analyzed in this project." While the San Diego Regional Board acknowledges that lagoons may have higher levels of bacteria than open beaches and streams, the Board does not set higher AEFs for such creeks and beaches. This is inconsistent and imposes unfairly strict AEFs on such waterbodies, and will likely result in more frequent an attainable non-compliance.

f. *Use of indicator bacteria for compliance and public health protection.* In response to the overarching question (b), "Is the scientific portion of the proposed rule based upon scientific knowledge, methods and practice", the reviewer questions the relationship between indicator bacteria and the threat to swimmers and fishers. It was specifically noted that, "At the time of this review, there is a reasonable amount of evidence in the peer-reviewed scientific literature that DNA-based markers of human waste can be used to more definitively understand the

presence of human waste." We support this point that the indicators used in the TMDL do not protect public health, and that human waste marker data should be used as the basis for the TMDL.

g. *Insufficient data.* There were several instances where the reviewers could not fully comment on the question posed to them because the draft of the TMDL they were given contained insufficient data (peer review topics #2, #5, #6, #7, #8, and #12). This lack of data was mentioned by at least one of the reviewers in 5 of the 12 topics they were asked to comment on. While this information was often added to the TMDL in response, the reviewers did not have a chance to review the new information added to the TMDL, and therefore could not give their full opinion on the original question posed to them.

h. *Conservative assumptions.* There were also a number of instances where the reviewers pointed out sources of significant error and uncertainty in the models, data, or parameters used in developing the TMDL (peer review topics #2, #3, #7, #8, and #10). For example, the lack of regrowth in the model, the use of parameters from a few subwatersheds for use in the entire TMDL area, the assumptions about dry weather flows, and several other issues were identified as potential sources of significant uncertainty. To each of these, the San Diego Regional Board responded that while they recognize these issues as significant sources of uncertainty, the parameters and models they used were the best possible given the state of the science and the limited data available. They also pointed to efforts they are currently undertaking to collect more data to improve the models, and that, if these lead to significant changes to the TMDL, it could be addressed in a reopener. While we accept that there are many limitations imposed by limited data and the state of the science, the number and magnitude of these many sources of uncertainty underline the need for a more transparent and quantitative assessment of the level of conservatism that was applied within the TMDL analyses, since "conservative assumptions" are cited by the Regional Board as the "implicit margin of safety" used to address these sources of uncertainty. It is common in modeling studies to quantify uncertainty that derives from assumptions and limited data. Such scientific rigor is standard practice and should be followed by the Regional Board within this TMDL as well. One reviewer comment (peer review topic #12) stated, "It is really difficult to tell what are the 'conservative assumptions'." While the discussion of these assumptions was subsequently expanded after the peer review, the reviewers did not have access to them when giving their comments. Therefore, the TMDL's assumptions were recognized by the reviewers as being conservative as well as non-transparent, therefore their ability to review (including the lack of an opportunity to review the expanded discussion) was limited.

i. *San Diego Regional Board responses not reviewed.* While many positive changes were made to the TMDL as a result of the peer review, the experts were not offered the opportunity to

approve the responses to their comments. Therefore, some of the responses by the Board may not have adequately addressed the reviewers' comments.

Lastly, a significant focus of this review was on the TMDL dry and wet weather modeling approaches, despite the fact that the TMDL model predictions (e.g., MS4 required load reductions to achieve the AEF during the critical year) were not used to set MS4 compliance metrics as stated in the draft Tentative Order. Rather, these compliance metrics were simply set to the reference beach average exceedance frequency for wet weather (22%) and the WQOs (SSM and GM) for dry weather. Therefore very little of the reviewers' attention was focused on aspects of the TMDL that are actually implemented for compliance determination purposes. For example, the reviewers were not asked to review the reference watershed data used to derive the AEF targets. Among other critical topics, reviewers were also not asked to comment on the appropriateness of using total coliform and fecal coliform rather than other indicators, nor were they consulted regarding the limits of technical achievability (nor are they experts on this subject). Therefore, we believe the peer review to have been limited in scope and lacking applicability to the important issues raised in this document.

4. Are TMDL MS4 WLAs Attainable?

BACTERIA WATER QUALITY STANDARDS ARE NOT CONSISTENTLY ATTAINABLE BY NON-STRUCTURAL SOURCE CONTROLS ALONE

Because of their low cost relative to structural treatment controls, the first emphasis of most Bacteria TMDL implementation strategies is to exhaustively explore and implement non-structural options to control bacteria at their source. Non-structural BMPs include outreach, inspection, and enforcement-based programs, such as those targeting homeowners to address over-irrigation and car washing as sources of dry weather runoff, pet owners to address pet waste, and food outlets to address sidewalk hose-down and proper trash and grease trap management. Non-structural BMPs also include illicit discharge detection and elimination programs, including efforts to identify sources of human waste into the MS4, such as recreational vehicle discharges and leaking sewer lines (where such flows may re-emerge into nearby stormdrains). Street sweeping and catch basin cleaning are also emphasized and intended to remove sources of sediment, trash and organic litter, all of which may contribute bacteria to the MS4.

Non-structural BMPs are essential components of the Comprehensive Load Reduction Plans (CLRPs) recently submitted to the Regional Board by the responsible parties named in the San Diego Bacteria TMDL. To the extent possible based on available data, the CLRPs quantified the effectiveness of non-structural BMPs. The CLRP analyses found these collective BMPs to achieve MS4 bacteria load reductions of 8 to 43% during dry weather and 5 to 29% during wet weather. Wide ranges were assumed due to the significant uncertainty associated with the effectiveness of such programs.

However, even with the most optimistic assumptions, a thoroughly exhaustive and comprehensive implementation of non-structural BMPs can simply not achieve compliance with the TMDL WLAs. This is partly because outreach, inspection, and enforcement can never achieve perfect control outcomes (i.e., some target groups will miss outreach, some behaviors won't change, and some waste generation activities will miss inspection). This is also partly because some urban bacteria loads are unable to be addressed by such programs (e.g., biofilms in stormdrains consistently grow and then mobilize whenever flows are present, such as during one of the many allowed dry weather flow sources like groundwater inflow and infiltration, and fire hydrant testing). Evaluations of the effectiveness of other source controls, such as sweeping and cleaning programs, have consistently indicated that they are not able to capture 100% of sediments and organic debris.

BACTERIA WATER QUALITY STANDARDS ARE NOT EVEN ATTAINABLE THROUGH USE OF STRUCTURAL BMPS

Because of limitations in the effectiveness and consistent performance of non-structural BMPs, more costly and time-intensive structural BMPs are described in the CLRPs in order to demonstrate additional, more effective and controllable bacteria reduction. Dry weather structural BMPs potentially include localized infiltration, diversions to sewer, and disinfection. During wet weather, however, many of these BMPs are often not feasible because flow rates are substantially greater and more variable, and considerable transient storage would be required. In general, more natural, passive, sustainable, and multi-benefit wet weather structural BMPs are preferred and recommended (as opposed to energy-intensive, mechanical systems).

Geosyntec is co-principal investigator on the EPA/ASCE International Stormwater BMP Database. The database is used to help evaluate and predict performance of structural BMPs in removing bacteria. Statistically evaluated monitoring data from the database, however, indicate that most non-disinfection[4] structural BMPs are not capable of achieving REC WQOs with the consistency, frequency, and predictability required by the TMDL and the CLRPs (Figure 3).

[4] Disinfection is not considered suitable or cost-effective for treating wet weather MS4 discharges.

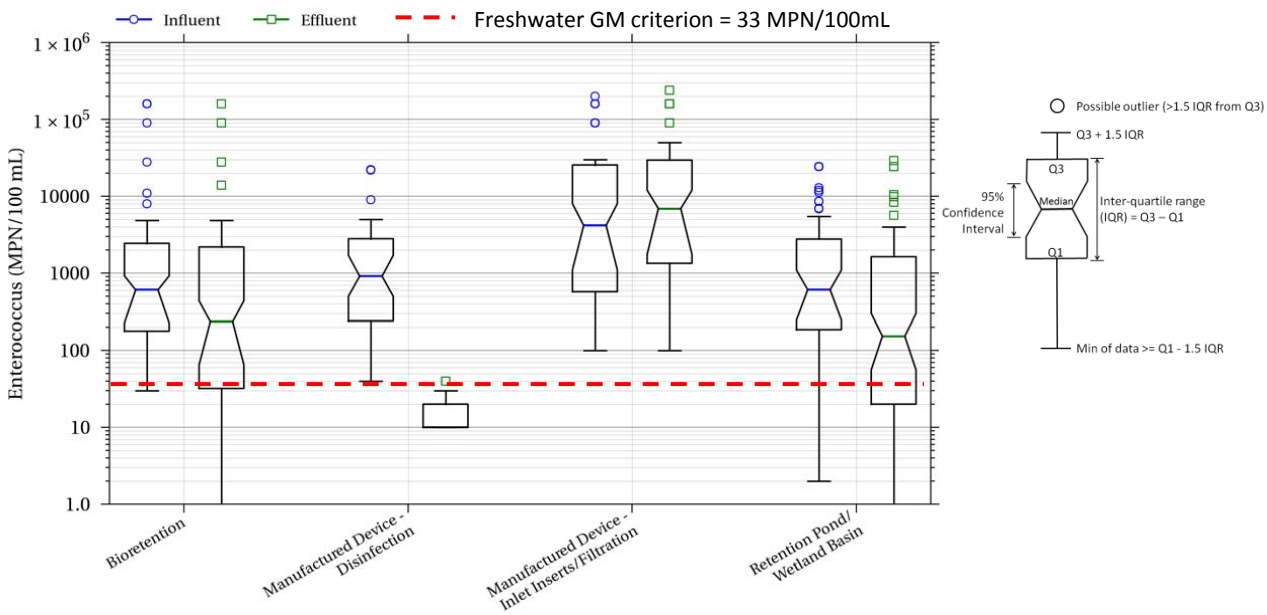


Figure 3. Structural BMP performance (Clary et al, 2012)

The CLRPs also describe other structural BMPs for wet weather controls such as subsurface flow wetlands (which have less performance data available but initial datasets suggest a relatively high level of effectiveness) and "zero discharge" types that rely on infiltration (e.g., infiltration trenches and basins) or capture and use (e.g., rainwater harvesting cisterns). These BMPs are effective for bacteria but are subject to local and site-specific constraints, which must be evaluated before implementation. For instance, infiltration BMPs are not appropriate for areas with relatively impervious soils, shallow groundwater, steep hillsides, landslide or liquefaction risk zones, subsurface contamination, or close proximity to certain structures. Similarly, capture and use BMPs are not cost effective for areas with little available water demand (such as minimal landscaping irrigation needs) or where water demand is temporally inconsistent with available supply (frequently the case in the arid southwest where rainfall occurs during one season while peak irrigation demands occur during a different period). Therefore many urban areas exist without feasible or cost-effective wet weather structural BMP options available.

EVEN COMBINING STRUCTURAL AND NON-STRUCTURAL BMPS, CONSISTENT AND RELIABLE ATTAINMENT OF BACTERIA STANDARDS IS NOT POSSIBLE

In order to reduce existing wet weather MS4 bacteria concentrations with the objective of meeting TMDL WLAs (with some regularity), no potential and reasonable non-structural and structural BMPs are excluded. This is the same strategy that is planned by many Los Angeles-area MS4 co-permittees in their TMDL Implementation Plans.

That said, there remain numerous small watershed and beach examples where exhaustive non-structural and structural BMP efforts have been intensively applied, and significant costs expended, without the desired (or initially predicted) outcome of compliance. Extrapolating such costs on a per acre basis to the entire Sand Diego Bacteria TMDL area would result in tremendous cost estimates without evidence that TMDL compliance would be achieved, or that public health would benefit as a result.

- In Santa Barbara, extensive stormdrain investigations were conducted using conventional techniques (e.g., CCTV, visual flow observation, automated flow rate measurement, wastewater chemical indicators, bacteria sampling, dye testing, etc.) as well as more novel ones (e.g., canines scent trained for human waste, and human waste genetic markers) to seek inputs of human waste. As a result, RV discharges and leaking sewer lines were identified and immediately addressed (Sercu et al, 2011). Despite these efforts, however, channel and creek indicator bacteria levels are unchanged.

- At the Santa Monica Pier, BMPs included bird netting, trash covers, homeless enforcement, prevention of pier washing, repair of leaking sewers, major dry weather storm drain diversion (Santa Monica Urban Runoff Recycling Facility [SMURRF]) and potable offset use, and human source marker sampling to confirm that human fecal sources were indeed removed (Gold, 2012). However, despite these significant efforts which cost approximately $14M to treat runoff from 5,000 acres, beach bacteria concentrations improved but TMDL exceedances persist.

- At Inner Cabrillo Beach in the Port of Los Angeles, BMPs and studies included hydrodynamic modeling, circulation enhancement field investigations, bird deterrent testing, bird exclusion structures, dry weather storm drain diversions, sewer inspection and groundwater sampling, sewer repair, eelgrass sampling (eelgrass was found to be a natural source of indicator bacteria), human source marker sampling, and beach sand replacement (since beach sands were found to be a reservoir for indicator bacteria) and storm drain outfall exclusion. Again, despite over $30 million dollars spent at this one beach, TMDL WLA exceedances persist (Port of Los Angeles, 2006).

- In the Aliso Creek watershed in Orange County, dry weather storm drain discharges were treated with disinfection; despite complete bacteria removal at the treatment system outlet, bacteria concentrations in the concrete channel shortly downstream (with no other discharges entering the channel) rebounded as a result of uncontrollable regrowth) (Andersen, 2005).

- At Ramirez Canyon in Malibu, where dry weather flows are disinfected at the beach by a system costing approximately $1 million dollars, surf zone water quality continues to exceed TMDL WLAs.

Perhaps most importantly, all the focused source control and treatment case studies described here focused on dry weather only; wet weather compliance costs would completely eclipse these dry weather compliance costs due to the orders of magnitude greater treatment flow rates.

OTHER ENVIRONMENTAL GOALS OFTEN CONFLICT WITH TMDL COMPLIANCE

There are also significant trade-offs between bacteria control measures and environmental concerns. For example, in-stream diversions often inhibit fish passage and impact downstream baseflow and habitat needs. In coastal environments, while shoreline wrack has been shown to contribute natural sources of bacteria, wrack itself is a valuable part of the beach ecosystem, and its removal is potentially problematic and often prohibited by resource agencies. Where bird feces is a significant bacteria source (like at many lagoons and beaches), resource agency requirements often restrict the use of bird deterrents because of needs to protect special status species such as the brown pelican. UV treatment of urban creeks also results in the sterilization of natural and beneficial aquatic microbes. Looking at the big picture, while massive treatment projects such as disinfection systems could be more effective at treating bacteria, such processes require significant long-term power consumption and do not necessarily align with the "sustainability" goals of regulators, municipalities, and the public (and in some cases, like the $12M Santa Monica Urban Runoff Facility, when the treatment system's water demand is not met by urban runoff, potable water must be supplied, resulting is a highly wasteful outcome). Lastly, some regional BMP footprints rely on recreational spaces for retention during wet weather and this land becomes unavailable for the intended public uses for a longer period than would have been the case otherwise. In summary, environmental constraints may be hindrances to projects that could reduce bacteria levels.

Conclusions

We appreciate the San Diego Regional Board's review of the above concerns and welcome any feedback. Our main concerns with the San Diego Bacteria TMDL are the lack of scientific justification and the infeasibility of achieving compliance. We strongly value the recreational uses of our water bodies; therefore, we are seeking revisions to the TMDL that would better reflect public health protection and the realities of technological and environmental constraints. To support these ends, the stakeholders have recently or are currently invested in the following significant efforts to improve the TMDL:

- The MS4 co-permittees have recently worked with SCCWRP to study the effects of Enterococci regrowth and natural bacteria sources at Moonlight State Beach in Encinitas and Rock Pile Beach in La Jolla (Griffith and Ferguson, 2012).
- The MS4 co-permittees are working with SCCWRP on an ongoing reference study evaluating both local reference watersheds and the impact of the wet day definition.
- The County and other San Diego MS4 co-permittees participated in the November 28-29 State of the Science Workshop to explore the current state of bacteria and science through the collaboration of experts, stakeholders, and regulators.
- The County is embarking upon significant bacteria source investigation work in the San Luis Rey, San Diego River, and San Dieguito River Watersheds.
- Other San Diego municipalities are considering QMRA test cases, including a proposal for funding through the Clean Beaches Initiative (CBI).

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Administrative Record Page No. 007393

COMPARISON OF COST OF ON-SITE RETENTION VS. TREATMENT AND RELEASE OF 85TH PERCENTILE STORM WATER RUNOFF

Job Number 16289-Z

November 29, 2012
Revised: January 8, 2013

RICK ENGINEERING COMPANY
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COMPARISON OF COST OF ON-SITE RETENTION VS. TREATMENT

AND

RELEASE OF 85TH PERCENTILE STORM WATER RUNOFF

Job Number 16289-Z

January 8, 2013

Dennis C. Bowling, M.S.
R.C.E. #32838
Exp. 06/14

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COMPARISON OF COST OF ON-SITE RETENTION VS. TREATMENT AND RELEASE OF 85TH PERCENTILE STORM WATER RUNOFF
January 8, 2013

This paper presents the results of an investigation of the potential cost of on-site retention of 85th percentile storm water runoff in San Diego County pursuant to the anticipated future municipal storm water permit (Tentative Order No. R9-2013-0001) versus the current cost of treatment and release of storm water runoff under the current municipal storm water permit (Order No. R9-2007-0001). This study was funded by the County of San Diego.

Background

California Regional Water Quality Control Board San Diego Region (SDRWQCB) Order No. R9-2007-0001, the municipal storm water permit in effect today for San Diego County and Co-Permittees, places requirements for new development and redevelopment to implement low impact development (LID) practices and/or treatment of storm water runoff. Priority development projects (PDPs) must implement LID practices such as infiltration or bioretention to treat storm water runoff to the maximum extent practicable (MEP). When LID practices are shown to be infeasible, storm water runoff may be treated using conventional treatment methods such as extended detention or filtration. The treated storm water runoff can be released from the project site. See Provisions D.1.d.(4) and D.1.d.(6) of Order No. R9-2007-0001 for LID and treatment control BMP requirements for PDPs.

A new municipal storm water permit, SDRWQCB Tentative Order No. R9-2013-0001, is anticipated to be adopted in spring 2013. The new municipal storm water permit would require each PDP to implement LID BMPs that are designed to retain (i.e., intercept, store, infiltrate, evaporate, evapotranspire, or harvest and use) a design capture volume of storm water runoff. See Provision E.3.c.(1)(a) and Appendix F, page F-87 of Tentative Order No. R9-2013-0001. When site conditions preclude the use of infiltration practices to remove the design capture volume, as is often the case in San Diego County due to geologic constraints, another potential way to dispose of the captured storm water runoff is to use it on-site ("harvest and use"). The purpose of this paper is to compare the cost of treating and releasing storm water runoff pursuant to current requirements of Order No. R9-2007-0001 (storm water management practice "today") to the potential cost of harvest and use of storm water runoff under the requirements of Tentative Order No. R9-2013-0001 (storm water management practice "future").

Selection of Projects and Practices for Analysis

For the purpose of this study, sample projects and storm water management practices had to be selected. There are many factors to be considered when evaluating the impact of the changing regulations. Any of the following factors could influence the results of the cost analysis: project size, project type (new development or redevelopment), proposed land use, site condition (e.g., soil type, geology, topography, proximity to existing infrastructure), amount of rainfall, or other factors. Therefore, multiple projects were evaluated. A range of typical projects was found from the "APWA BMP Sizing Calculator Training" workshop presented on March 8, 2011. In early 2011,

Rick Engineering Company developed five example projects for the purpose of training engineers to use the San Diego BMP Sizing Calculator in the "APWA BMP Sizing Calculator Training" workshop. All of the five example projects were based on actual PDPs. For the APWA workshop, "snapshots" of portions of the PDPs were taken for simplified analysis, amounts of impervious and pervious area were tabulated, and details of project site characteristics that affect runoff such as soil type, rainfall basin, and slope were created to represent a range of conditions throughout San Diego County. Using these previously developed example projects provided an un-biased range of realistic projects. Exhibits of the five example projects are attached (Attachment 1). Note the facility sizes and orifice sizes shown on the attached exhibits are from the BMP Sizing Calculator results for hydromodification management from the APWA workshop and are not a part of this study.

Tables 1 and 2 present the project data for the five example projects. In general it will be assumed that all of the project area will be captured in the storm water management practice, including landscaping area. However, example project 5 includes such a significant amount of landscaping area (approximately 30.55 acres or 51%) that this project will be evaluated both with and without capturing the landscaping area. Example project "5" will capture all of the project area including landscaping, and example project "5a" is the same project but capturing only the impervious area.

Table 1
Example Project Data

Project	Description	Total Area (Acres)	Rain Gauge	Slope	Hydrologic Soil Group
1	New Linear Roadway	0.77	Oceanside	Flat	C
2	Residential	1.15	Oceanside	Moderate	D
3	Small Commercial	0.53	Lake Wohlford	Flat	B
4	Redevelopment (Apartment Complex)	0.29	Lindbergh Field	Flat	D
5	Large Commercial	59.59	Lake Wohlford	Flat	D
5a	Large Commercial (Capturing the Impervious Area Only)	59.59	Lake Wohlford	Flat	D

Table 2
Example Project Proposed Impervious Area, Landscape Area, and Post-Project Effective Impervious Area

Project	Description	Total Area (ft^2)	Proposed Impervious Area (ft^2)	Proposed Landscape Area (ft^2)	Post-Project Effective Impervious Area* (ft^2)
1	New Linear Roadway	33,452	28,366	5,086	28,875
2	Residential	49,886	29,525	20,361	31,561
3	Small Commercial	23,020	19,787	3,233	20,110
4	Redevelopment (Apartment Complex)	12,613	11,163	1,450	11,308
5	Large Commercial	2,595,606	1,264,901	1,330,705	1,397,972
5a	Large Commercial (Capturing the Impervious Area Only)	2,595,606	1,264,901	1,330,705 (not captured)	1,264,901

*Post-project Effective Impervious Area = (Proposed Impervious Area x 1.0) + (Proposed Landscape Area x 0.1), pursuant to the County of San Diego SUSMP dated January 8, 2011.

Post-project effective impervious area was calculated based on the method and runoff factors presented in the County of San Diego SUSMP dated January 8, 2011. The runoff factor for impervious area is 1.0. The runoff factor for landscape area is 0.1.

Stormwater Management Practice "Today"

There is a wide range of options available to satisfy the PDP LID and treatment control requirements of Order No. R9-2007-0001. In order to quantify the cost of requirements today, an appropriate LID or treatment control BMP must be selected. Bioretention was selected for this analysis because it would satisfy requirements for LID as well as provide a high level of treatment for most pollutants. Provided that land is available for a bioretention system (i.e., provided the bioretention system can fit into land already slated for project landscaping), it is also expected to be a relatively cost-effective practice, especially when long-term maintenance is considered.

Treatment-only bioretention facilities were sized for each example project using a sizing factor of 0.04 multiplied by the effective impervious area, pursuant to the County of San Diego SUSMP dated January 8, 2011. Table 3 presents the sizing of treatment-only bioretention facilities.

Table 3
Sizing of Bioretention Facilities

Project	Description	Post-Project Effective Impervious Area (ft^2)	Surface Area of Treatment-Only Bioretention Facility* (ft^2)
1	New Linear Roadway	28,875	1,155
2	Residential	31,561	1,262
3	Small Commercial	20,110	804
4	Redevelopment (Apartment Complex)	11,308	452
5	Large Commercial	1,397,972	55,919
5a	Large Commercial (Capturing the Impervious Area Only)	1,264,901	50,596
*Area of Treatment-Only Bioretention Facility = 0.04 x Post-Project Effective Impervious Area			

Stormwater Management Practice "Future"

It is anticipated that harvest and use of storm water will be the typical method for PDPs to satisfy the on-site retention requirement of Provision E.3.c.(1)(a) of Tentative Order No. R9-2013-0001. There are many ways to use harvested storm water. Some typical uses include irrigation, toilet flushing, and HVAC cooling. For the purpose of this study, it is assumed that the harvested storm water will be used for spray irrigation. All of the five example projects include landscaping on-site and will have a demand for irrigation water. However, this study does not establish a maximum holding time for the harvested storm water, size storage units to ensure collection of back to back storm events, or optimize the size of the storage unit based on irrigation demand. This study simply calculates the minimum design capture volume of storm water runoff pursuant to Provision E.3.c.(1)(a)(i) of Tentative Order No. R9-2013-0001. For the purpose of this study, the storm water harvesting system is assumed to include a pre-treatment unit to capture gross pollutants (for example inlet inserts or a hydrodynamic separator), an underground concrete vault for storage, a mechanical system for distribution that includes a pump, a treatment system consisting of fine filtration and ultraviolet disinfection, and a connection to a source of make-up water using a reduced pressure zone (RPZ) valve. Make-up water is the municipal water supply that will augment the harvested storm water supply to fulfill the total water demand (in this case, the total irrigation demand).

The minimum volume of the storm water runoff harvesting facility was calculated based on Provision E.3.c.(1)(a)(i) of Tentative Order No. R9-2013-0001, the volume of storm water produced from a 24-hour 85th percentile storm event. The 85th percentile rainfall was determined from the June 2003 *San Diego County Hydrology Manual*, Appendix E, 85th Percentile Precipitation Isopluvial Map. Table 4 presents the sizing of storm water harvesting facilities (minimum on-site retention volume).

Table 4
Sizing of Storm Water Harvesting Facilities

Project	Description	85th Percentile Rainfall (inches)	Post-Project Effective Impervious Area (ft^2)	Minimum On-Site Retention Volume* (ft^3)	Minimum On-Site Retention Volume (gallons)
1	New Linear Roadway	0.70	28,875	1,684	12,600
2	Residential	0.70	31,561	1,841	13,772
3	Small Commercial	0.85	20,110	1,424	10,656
4	Redevelopment (Apartment Complex)	0.60	11,308	565	4,229
5	Large Commercial	0.85	1,397,972	99,023	740,743
5a	Large Commercial (Capturing the Impervious Area Only)	0.85	1,264,901	89,597	670,233

*Minimum On-Site Retention Volume (ft^3) = (85th Percentile Rainfall / 12 inches per foot) x Post-Project Effective Impervious Area
**1 cubic foot is approximately 7.48 gallons

Costs

Rick Engineering Company estimated the cost of a typical treatment-only bioretention system in San Diego (based on a detail consistent with the County of San Diego SUSMP) at approximately $9.00 per square foot for media, liners, subdrains, lansdcaping, and installation. Based on the California Storm Water Quality Association New Development and Redevelopment Handbook Fact Sheet TC-32 Bioretention, construction costs for bioretention for commercial, industrial, or institutional sites can range from $10.00 to $40.00 per square foot, based on the need for control structures, curbing, storm drains, and underdrains. All of the example projects in this study would be considered to be "commercial-sized" projects. The low range cost for a commercial scale bioretention system was selected from TC-32. The following was used to estimate the cost for the treatment-only bioretention systems: $10.00 per square foot of bioretention area.

The cost of a rainwater harvesting system includes the cost of the pre-treatment unit (for example inlet inserts or a hydrodynamic separator), the storage vault, and the mechanical system for distribution. Pre-treatment costs were estimated to be $1,000.00 per inlet insert or roof drain insert (example projects 1 and 3 would each require 1 inlet insert and example project 4 would require 4 roof drain inserts), $15,000.00 for a small hydrodynamic separator for example project 2, or $40,000.00 for a large hydrodynamic separator for example project 5. The cost of the storage vault was estimated to be $8.50 per cubic foot for a modular concrete underground storage system. The

mechanical system includes a pump, a treatment system consisting of fine filtration and ultraviolet disinfection, and a connection to a source of make-up water. The total mechanical system cost was estimated to be $45,000.00 for the small projects (example projects 1 through 4, which will be storing and processing an average of 10,000 gallons of runoff), and $110,000 for the large project (example project 5, which will be processing approximately 700,000 gallons of runoff). The sum of the pre-treatment, storage, and mechanical system costs for each example project is presented in Table 5.

Table 5
Sum of Estimated Costs for Rainwater Harvesting Systems

Project	Description	Total Area (Acres)	Estimated Cost for Pre-Treatment	Estimated Cost for Runoff Storage	Estimated Cost for Mechanical System	Total Estimated Cost
1	New Linear Roadway	0.77	$1,000	$14,317	$45,000	$60,317
2	Residential	1.15	$15,000	$15,649	$45,000	$75,649
3	Small Commercial	0.53	$1,000	$12,108	$45,000	$58,108
4	Redevelopment (Apartment Complex)	0.29	$4,000	$4,806	$45,000	$53,806
5	Large Commercial	59.59	$40,000	$841,695	$110,000	$991,695
5a	Large Commercial (Capturing the Impervious Area Only)	(29.04 acres new impervious area)	$40,000	$761,576	$110,000	$911,576

Cost Comparison

Table 6 presents the estimated costs for on-site retention (harvest and use) of storm water runoff vs. treatment (treatment-only bioretention) and release of storm water runoff.

Table 6
Comparison of Costs for Harvest and Use of Storm Water Runoff vs. Treatment and Release of Storm Water Runoff

Project	Description	Total Area (Acres)	Estimated Cost for Treatment-Only Bioretention	Estimated Cost for Harvest and Use System	Ratio of Harvest and Use Cost to Treatment-Only Bioretention Cost
1	New Linear Roadway	0.77	$11,550	$60,317	5
2	Residential	1.15	$12,624	$75,649	6
3	Small Commercial	0.53	$8,044	$58,108	7
4	Redevelopment (Apartment Complex)	0.29	$4,523	$53,806	12
5	Large Commercial	59.59	$559,189	$991,695	2
5a	Large Commercial (Capturing the Impervious Area Only)	(29.04 acres new impervious area)	$505,960	$911,576	2

The results in Table 5 show that for example projects 1 through 4 ranging in size from 0.29 to 1.15 acres, the cost to harvest and use storm water runoff is approximately 5 to 12 times the cost of treatment-only bioretention and release of storm water runoff under the requirements of Order No. R9-2007-0001. For the larger project, example project 5, the cost of harvest and use is approximately twice the cost of treatment and release of runoff, regardless of whether the project design will capture runoff from all of the project area or from only the impervious area.

The following other factors may be significant to the cost or benefit of harvest and use of storm water runoff: the value of land not used for bioretention, the cost of electricity to operate the system, the value of the harvested water, system maintenance costs, possible enhancement to property value from "green" infrastructure, or other factors. These factors can only be quantified for systems that are in place and operating, and are not a part of this study.

Impact With Hydromodification Management

All of the five example projects were initially developed for the purpose of training engineers to use the San Diego BMP Sizing Calculator, which is a tool for sizing hydromodification management facilities pursuant to the "Final Hydromodification Management Plan" for County of San Diego dated March 2011. This study used the same previously developed example projects to evaluate treatment-only storm water management facilities, and the cost analysis in this study does not factor in the facility sizes potentially needed to meet hydromodification management criteria. In all cases, the size of the hydromodification management facility would be much larger than the size of the potential harvest and use facility. It can be expected that for PDPs subject to hydromodification management, the hydromodification management requirements will determine the design of storm water management facilities, and the impact of the future on-site retention requirements may be less significant.

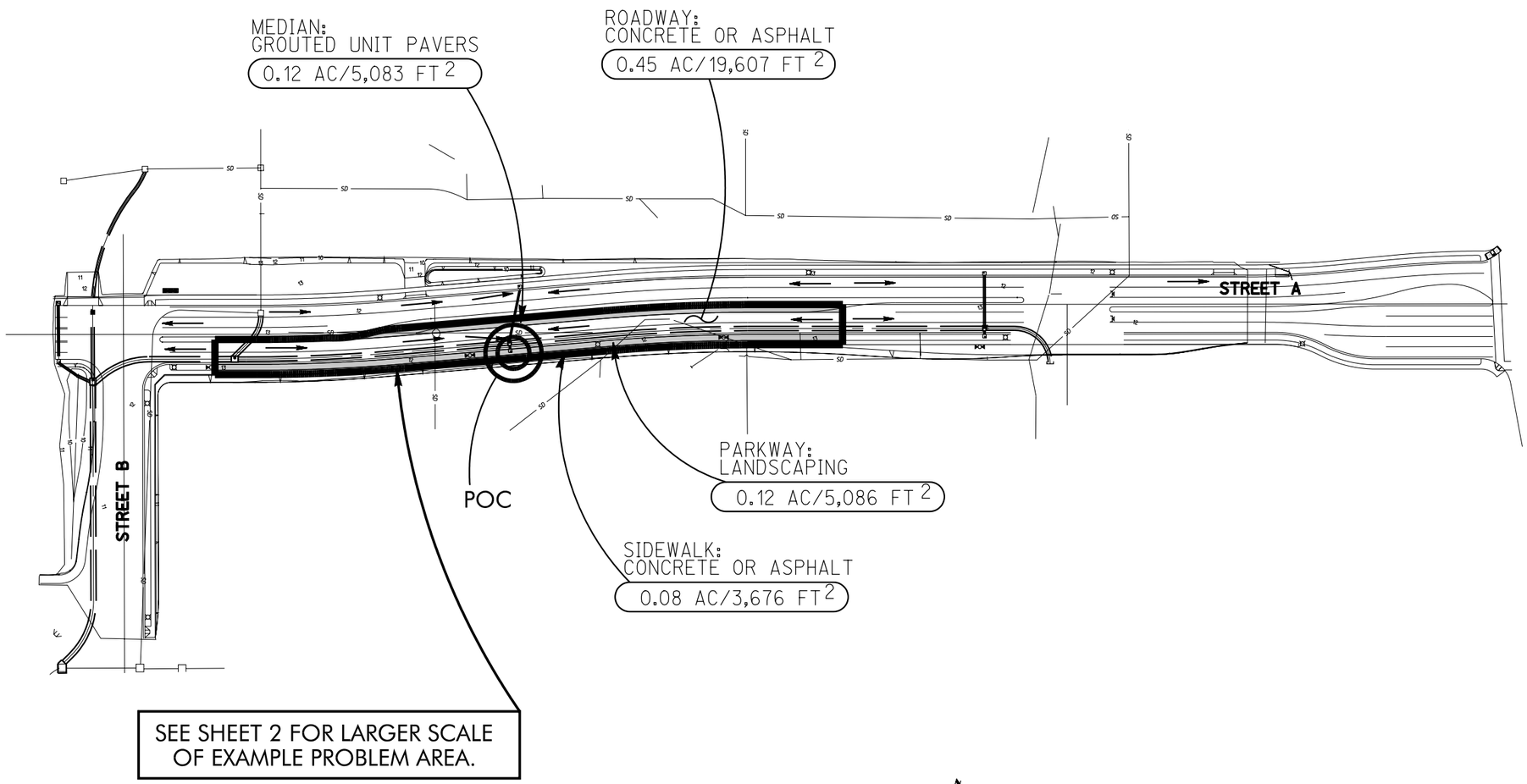
Conclusion

Based on the costs estimated for this study, the cost of storm water management features for new development and redevelopment priority development projects to satisfy the requirements of the future municipal storm water permit, Tentative Order No. R9-2013-0001, may be two to twelve the cost of storm water management practices to satisfy the requirements of the current municipal storm water permit, Order No. R9-2007-0001. It is important to note that all new development and redevelopment projects are unique, and may or may not implement the specific storm water management features evaluated in this study, as there are many practices available to meet the current or future municipal permit requirements.

Attachment 1
Exhibits of Five Example Projects

New Linear Roadway
Residential
Small Commercial
Redevelopment (Apartment Complex)
Large Commercial

APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #1 ~ NEW LINEAR ROADWAY
EXHIBIT 1 (SHEET 1 OF 2)



150 75 0 150 300 450

GRAPHIC SCALE 1"= 150'

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MARCH 8, 2011

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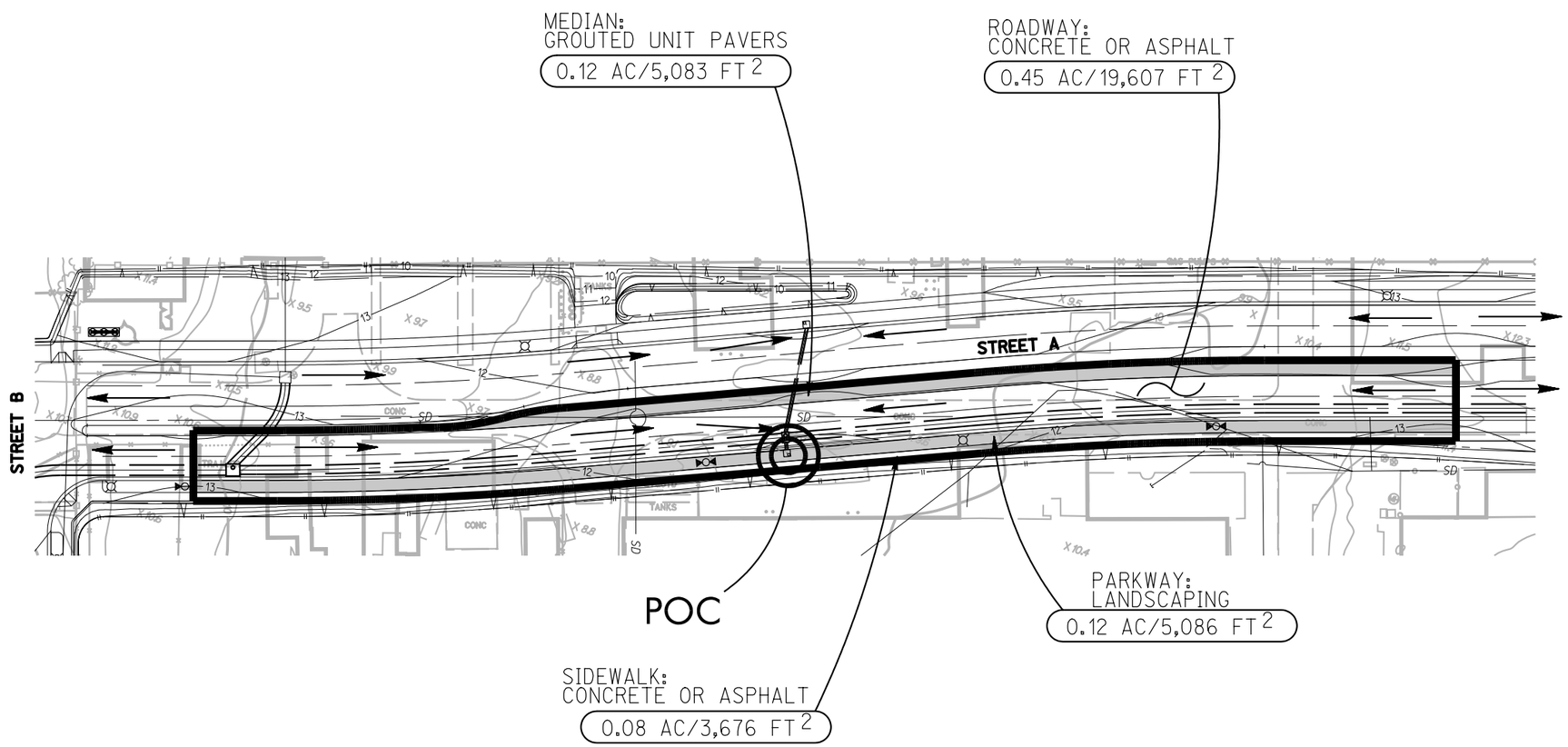
APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #1 ~ NEW LINEAR ROADWAY
EXHIBIT 1 (SHEET 2 OF 2)



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GRAPHIC SCALE 1"= 80'

EXAMPLE # 1 ~ NEW LINEAR ROADWAY

EXAMPLE INPUT DATA

- ☐ DESIGN GOAL: TREATMENT + FLOW CONTROL
- ☐ RAINFALL BASIN: OCEANSIDE
- ☐ POINT OF COMPLIANCE (POC): SUMP INLET ON STREET A
- ☐ DRAINAGE SOIL (HYDROLOGIC SOIL TYPE): TYPE C
- ☐ POST SURFACE: VARIES (SEE EXHIBIT)
- ☐ PRE-PROJECT COVER: PERVIOUS
- ☐ PRE-PROJECT SLOPE: 2%

EXAMPLE PROBLEM

SCENARIO 1:

DESIGN BIORETENTION BMP FOR PROPOSED PROJECT SURFACE AS SHOWN ON EXHIBIT.

ANSWER: AREA 3,748.8 FT^2
V_1 3,123.1 FT^3
V_2 2,249.3 FT^3
ORIFICE 0.5 IN

SCENARIO 2:

CHANGE BIORETENTION BMP TO FLOW-THROUGH PLANTER BMP.

ANSWER: AREA 5,479.1 FT^2
V_1 4,565.0 FT^3
V_2 3,287.4 FT^3
ORIFICE 0.5 IN

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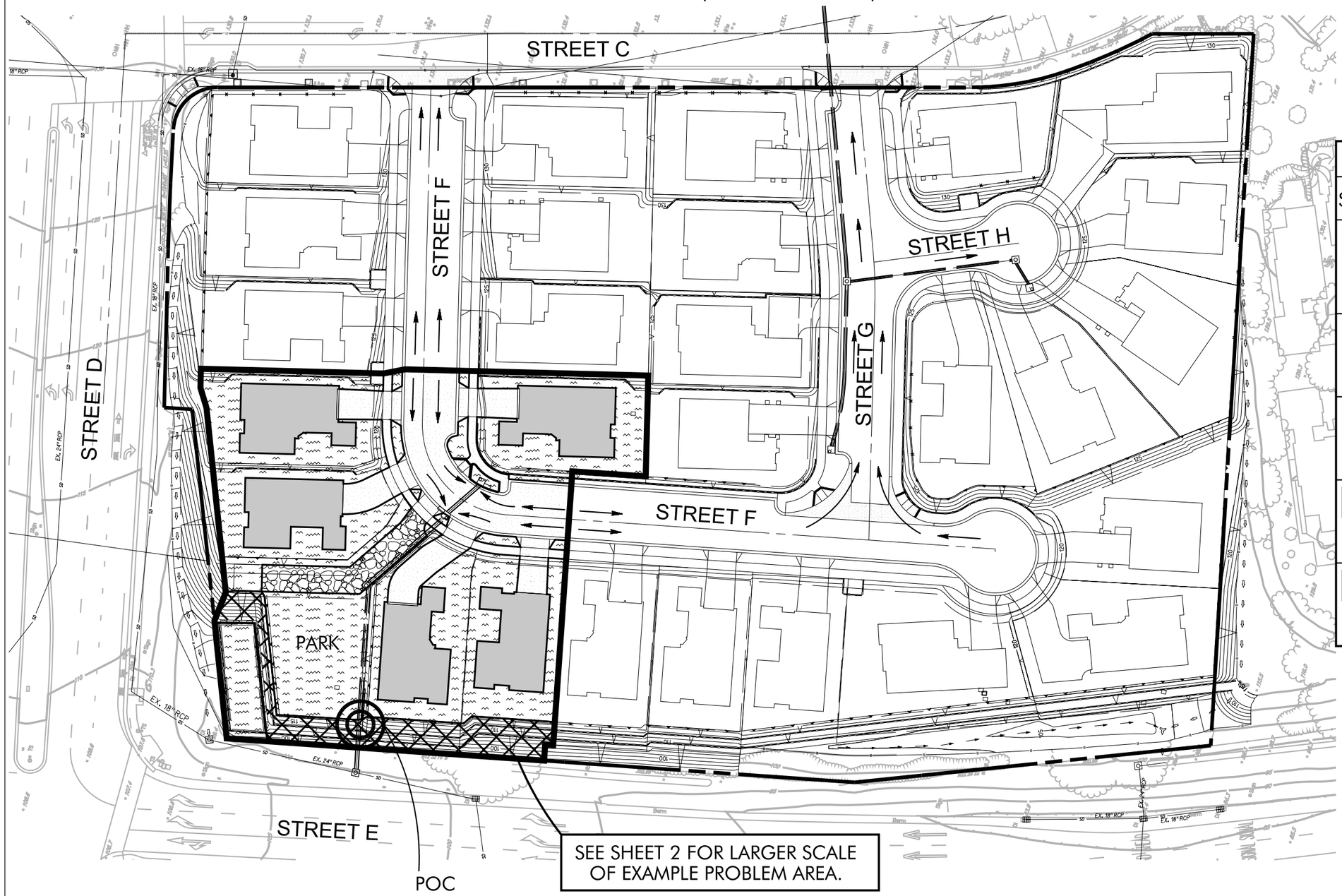
APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #2 ~ RESIDENTIAL
EXHIBIT 1 (SHEET 1 OF 2)



LEGEND		
SYMBOL	SURFACE	TOTAL AREA
	DRIVEWAYS, SIDEWALKS AND ROADWAY: CONCRETE OR ASPHALT	0.19 AC/8,194 FT^2
	ROOFS: ROOFS	0.45 AC/19,785 FT^2
	MAINTENANCE ACCESS: CRUSHED AGGREGATE	0.03 AC/1,546 FT^2
	LAWNS, PARK: LANDSCAPING	0.47 AC/20,361 FT^2
	SLOPES: LANDSCAPING (SELF-TREATING)	0.08 AC/3,699 FT^2

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60 30 0 60 120 180

GRAPHIC SCALE 1"= 60'

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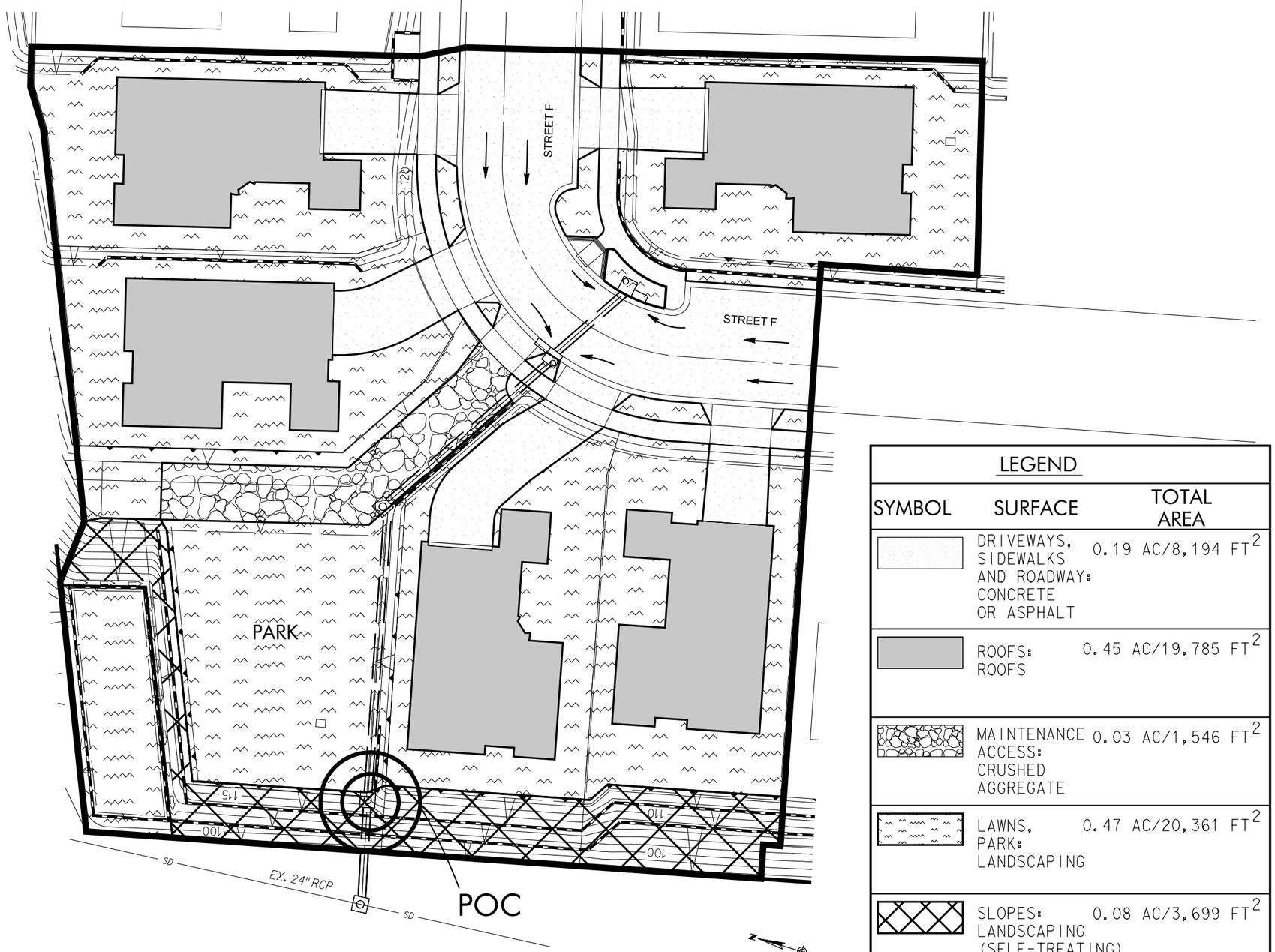
APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #2 ~ RESIDENTIAL
EXHIBIT 1 (SHEET 2 OF 2)



LEGEND

SYMBOL	SURFACE	TOTAL AREA
	DRIVEWAYS, SIDEWALKS AND ROADWAY: CONCRETE OR ASPHALT	0.19 AC/8,194 FT^2
	ROOFS: ROOFS	0.45 AC/19,785 FT^2
	MAINTENANCE ACCESS: CRUSHED AGGREGATE	0.03 AC/1,546 FT^2
	LAWNS, PARK: LANDSCAPING	0.47 AC/20,361 FT^2
	SLOPES: LANDSCAPING (SELF-TREATING)	0.08 AC/3,699 FT^2

30 15 0 30 60 90

GRAPHIC SCALE 1"= 30'

EXAMPLE #2 ~ RESIDENTIAL

EXAMPLE INPUT DATA

- ☐ DESIGN GOAL: TREATMENT + FLOW CONTROL
- ☐ RAINFALL BASIN: OCEANSIDE
- ☐ POINT OF COMPLIANCE (POC): OUTLET TO STREET E
- ☐ DRAINAGE SOIL (HYDROLOGIC SOIL TYPE): TYPE D
- ☐ POST SURFACE: VARIES (SEE EXHIBIT)
- ☐ PRE-PROJECT COVER: PERVIOUS
- ☐ PRE-PROJECT SLOPE: 7%

EXAMPLE PROBLEM

SCENARIO 1:

DESIGN CISTERN PLUS BIORETENTION BMP FOR PROJECT SURFACES AS SHOWN ON EXHIBIT.

ANSWER: CISTERN VOLUME 6,011.4 FT^3

BIORETENTION AREA 601.1 FT^2

ORIFICE 0.6 IN

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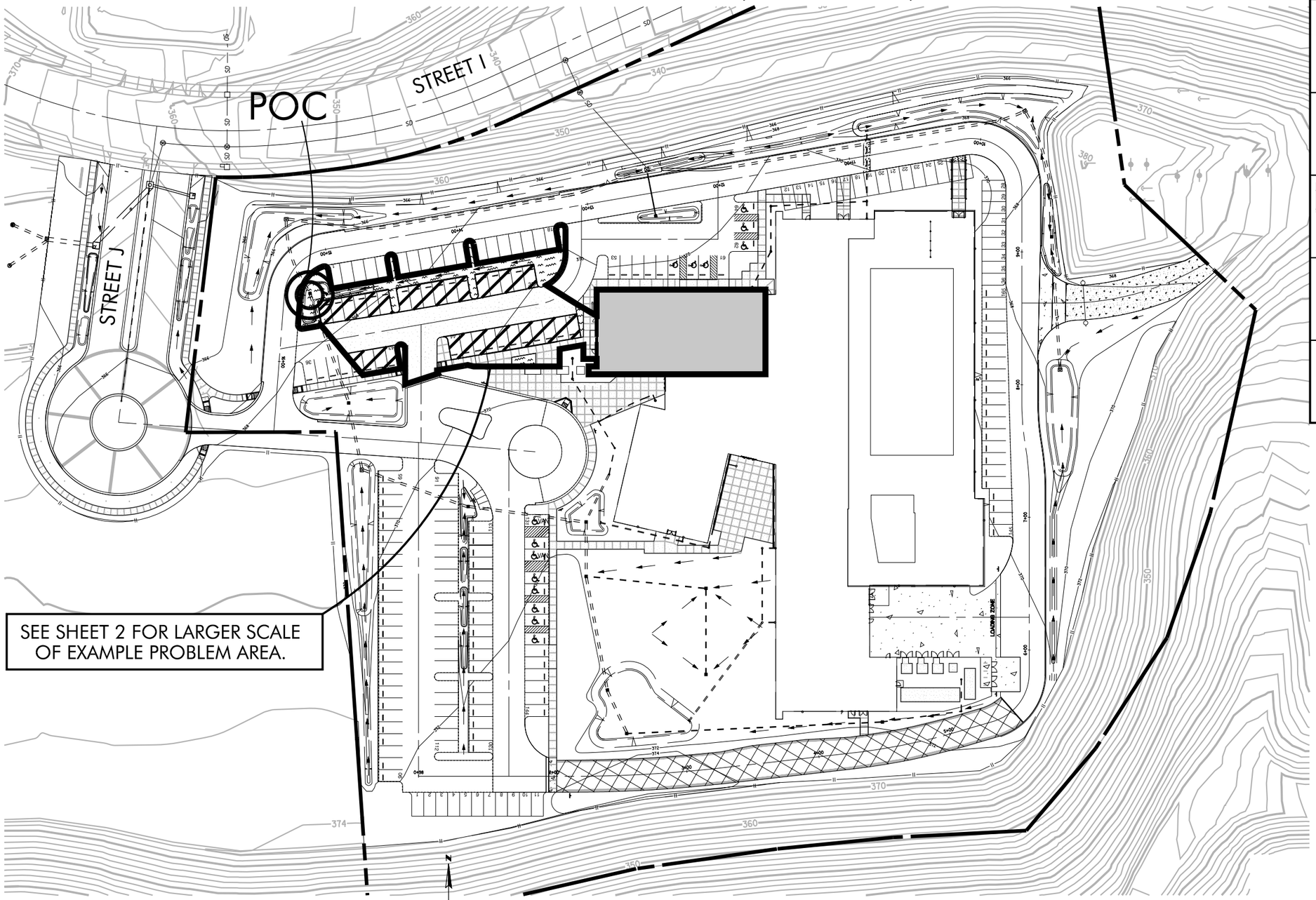
APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #3 ~ SMALL COMMERCIAL
EXHIBIT 1 (SHEET 1 OF 2)



LEGEND

SYMBOL	SURFACE	TOTAL AREA
	DRIVE LANE: CONCRETE OR ASPHALT	0.11 AC/5,030 FT^2
	ROOFS: ROOFS	0.19 AC/8,126 FT^2
	PARKING STALLS: CONCRETE OR ASPHALT	0.12 AC/5,112 FT^2
	SIDEWALK: CONCRETE OR ASPHALT	0.03 AC/1,519 FT^2
	LANDSCAPING: LANDSCAPING	0.07 AC/3,233 FT^2

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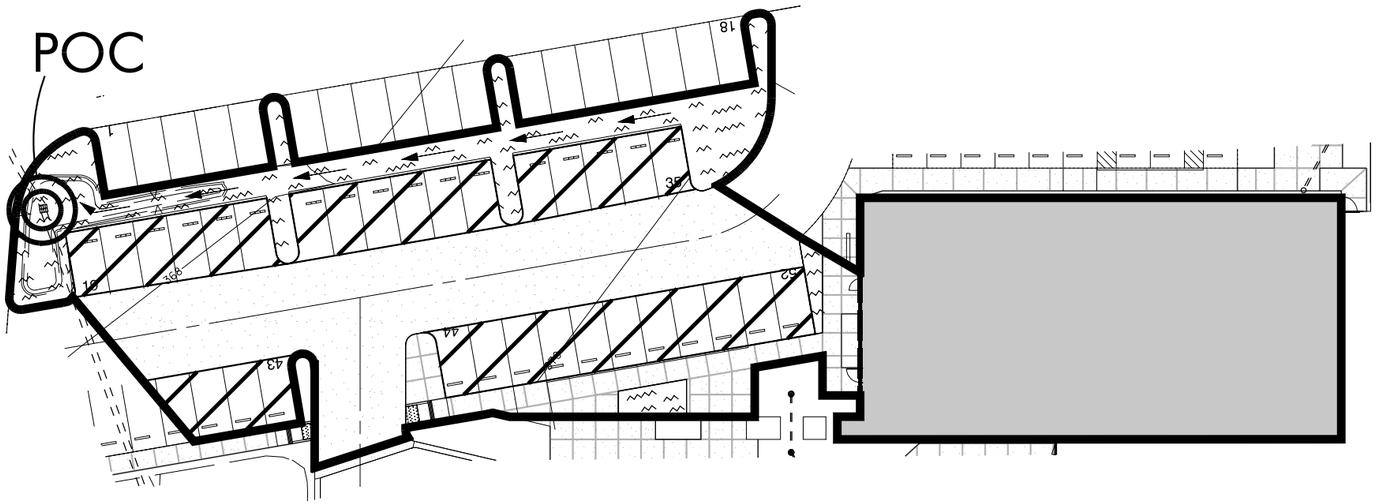
APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #3 ~ SMALL COMMERCIAL
EXHIBIT 1 (SHEET 2 OF 2)



EXAMPLE # 3 ~ SMALL COMMERCIAL

EXAMPLE INPUT DATA

- ☐ DESIGN GOAL: TREATMENT + FLOW CONTROL
- ☐ RAINFALL BASIN: LAKE WOHLFORD
- ☐ POINT OF COMPLIANCE (POC): NORTHWEST CORNER OF PARKING ISLAND
- ☐ DRAINAGE SOIL (HYDROLOGIC SOIL TYPE): TYPE B
- ☐ POST SURFACE: VARIES (SEE EXHIBIT)
- ☐ PRE-PROJECT COVER: PERVIOUS
- ☐ PRE-PROJECT SLOPE: 1%

EXAMPLE PROBLEM

SCENARIO 1:

DESIGN DRY WELL BMP FOR PROPOSED PROJECT SURFACES AS SHOWN ON EXHIBIT.

ANSWER: AREA 1,542.8 FT^2

VOLUME 4,011.3 FT^3

SCENARIO 2:

CHANGE SURFACE OF PARKING STALLS FROM CONCRETE OR ASPHALT TO SOLID UNIT PAVERS ON GRANULAR AND RE-SIZE DRY WELL BMP.

ANSWER: AREA 1,218.7 FT^2

VOLUME 3,168.7 FT^3

LEGEND

SYMBOL	SURFACE	TOTAL AREA
	DRIVE LANE: CONCRETE OR ASPHALT	0.11 AC/5,030 FT^2
	ROOFS: ROOFS	0.19 AC/8,126 FT^2
	PARKING STALLS: CONCRETE OR ASPHALT	0.12 AC/5,112 FT^2
	SIDEWALK: CONCRETE OR ASPHALT	0.03 AC/1,519 FT^2
	LANDSCAPING: LANDSCAPING	0.07 AC/3,233 FT^2

N

40 20 0 40 80 120

GRAPHIC SCALE 1"= 40'

RICK ENGINEERING COMPANY
5620 FRIARS ROAD
SAN DIEGO, CA 92110
619.291.0707
(FAX)619.291.4165

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MARCH 8, 2011

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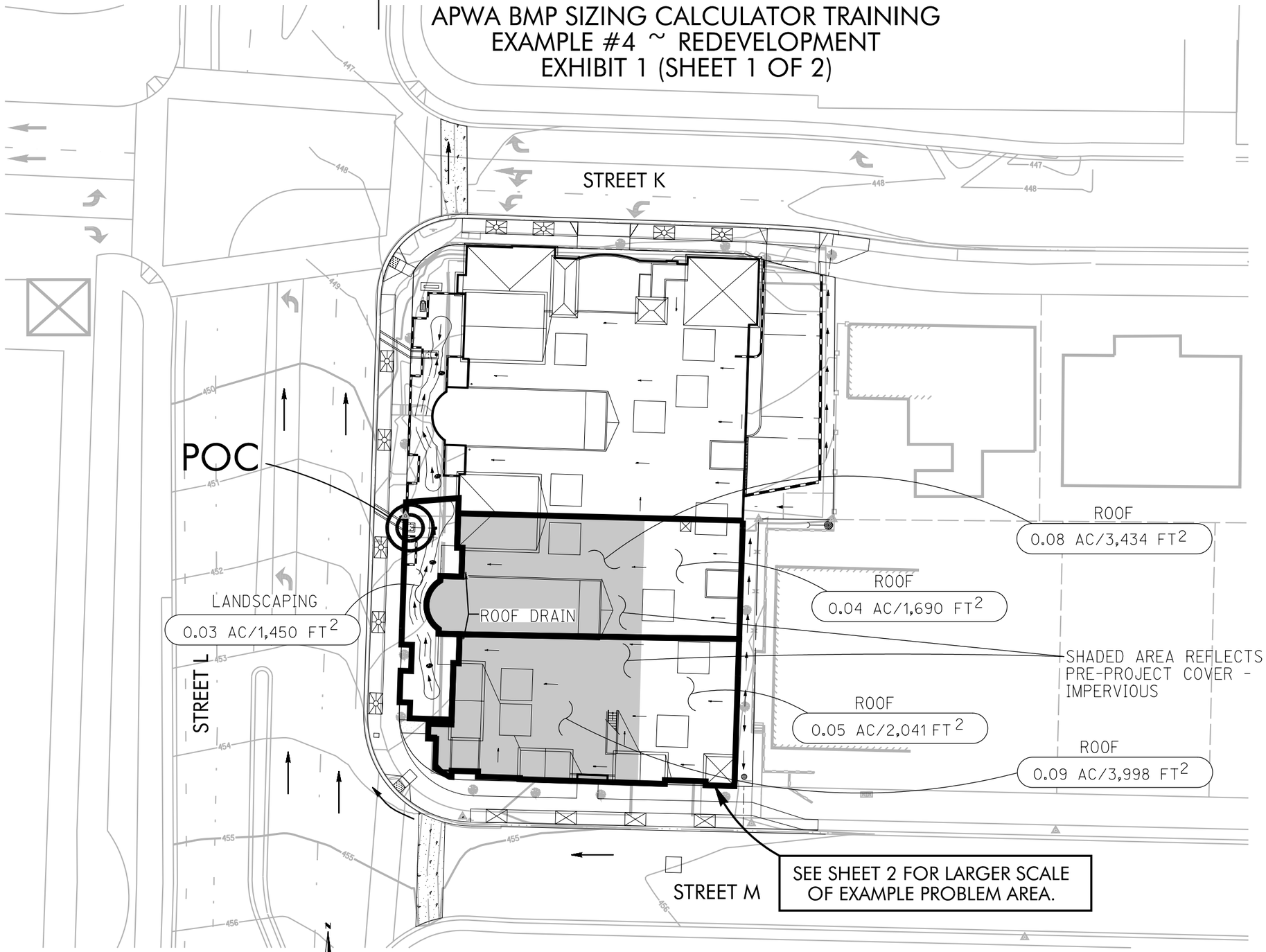
03-MAR-2011 09:53

APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #4 ~ REDEVELOPMENT
EXHIBIT 1 (SHEET 1 OF 2)



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GRAPHIC SCALE 1"= 40'

MARCH 8, 2011

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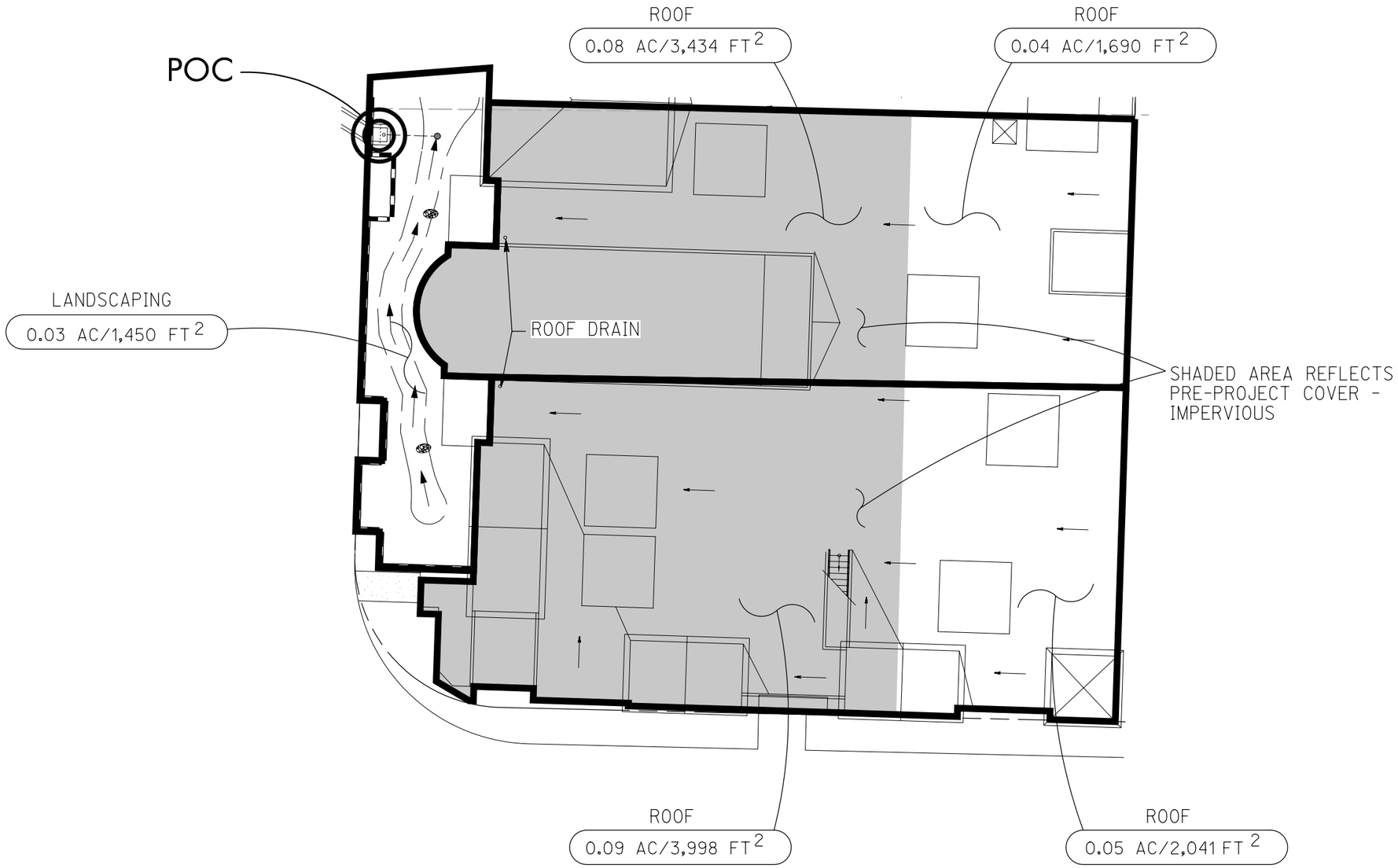
APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #4 ~ REDEVELOPMENT
EXHIBIT 1 (SHEET 2 OF 2)



N

20 10 0 20 40 60

GRAPHIC SCALE 1"= 20'

EXAMPLE # 4 ~ REDEVELOPMENT

EXAMPLE INPUT DATA

- ☐ DESIGN GOAL: TREATMENT + FLOW CONTROL
- ☐ RAINFALL BASIN: LINDBERGH FIELD
- ☐ POINT OF COMPLIANCE (POC): OUTLET TO STREET L
- ☐ DRAINAGE SOIL (HYDROLOGIC SOIL TYPE): TYPE D
- ☐ POST SURFACE: VARIES (SEE EXHIBIT)
- ☐ PRE-PROJECT COVER: PERVIOUS EXCEPT SHADED AREA - IMPERVIOUS (SEE EXHIBIT)
- ☐ PRE-PROJECT SLOPE: 1%

EXAMPLE PROBLEM

SCENARIO 1:

DESIGN BIORETENTION PLUS VAULT BMP FOR PROPOSED PROJECT SURFACES AS SHOWN ON EXHIBIT.

ANSWER: AREA 162.0 FT^2

V_1 1,053.3 FT^3

ORIFICE 0.4 IN

SCENARIO 2:

ASSUME THIS IS NEW DEVELOPMENT AND ALL PRE-PROJECT COVER IS PERVIOUS.

DESIGN BIORETENTION PLUS VAULT BMP FOR PROPOSED PROJECT SURFACES AS SHOWN ON EXHIBIT.

ANSWER: AREA 458.2 FT^2

V_1 2,978.7 FT^3

ORIFICE 0.1 IN

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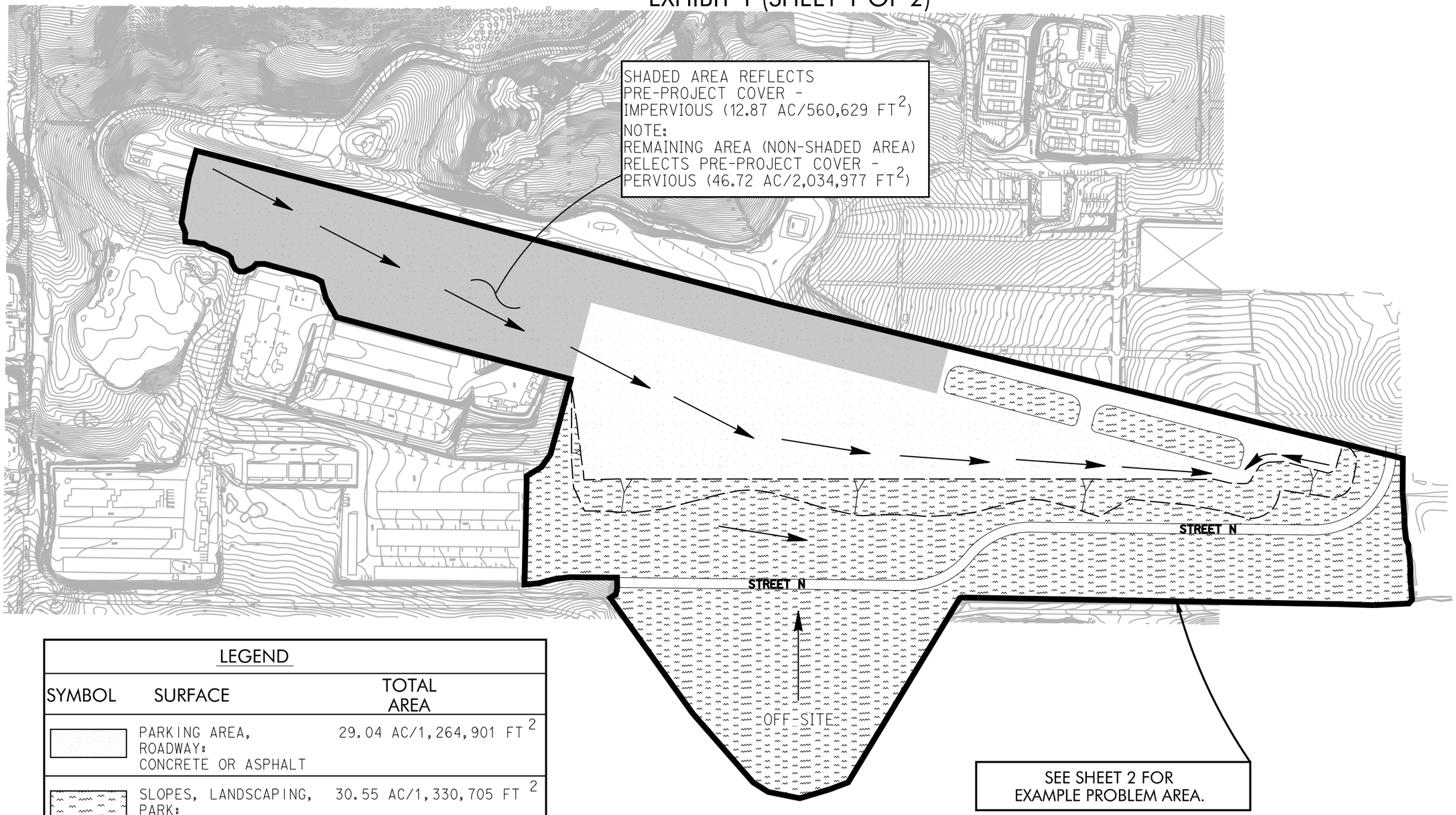
04-MAR-2011 18:25

APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #5 ~ LARGE COMMERCIAL
EXHIBIT 1 (SHEET 1 OF 2)



LEGEND

SYMBOL	SURFACE	TOTAL AREA
	PARKING AREA, ROADWAY: CONCRETE OR ASPHALT	29.04 AC/1,264,901 FT^2
	SLOPES, LANDSCAPING, PARK: LANDSCAPING	30.55 AC/1,330,705 FT^2

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300 150 0 300 600 900

GRAPHIC SCALE 1"= 300'

MARCH 8, 2011

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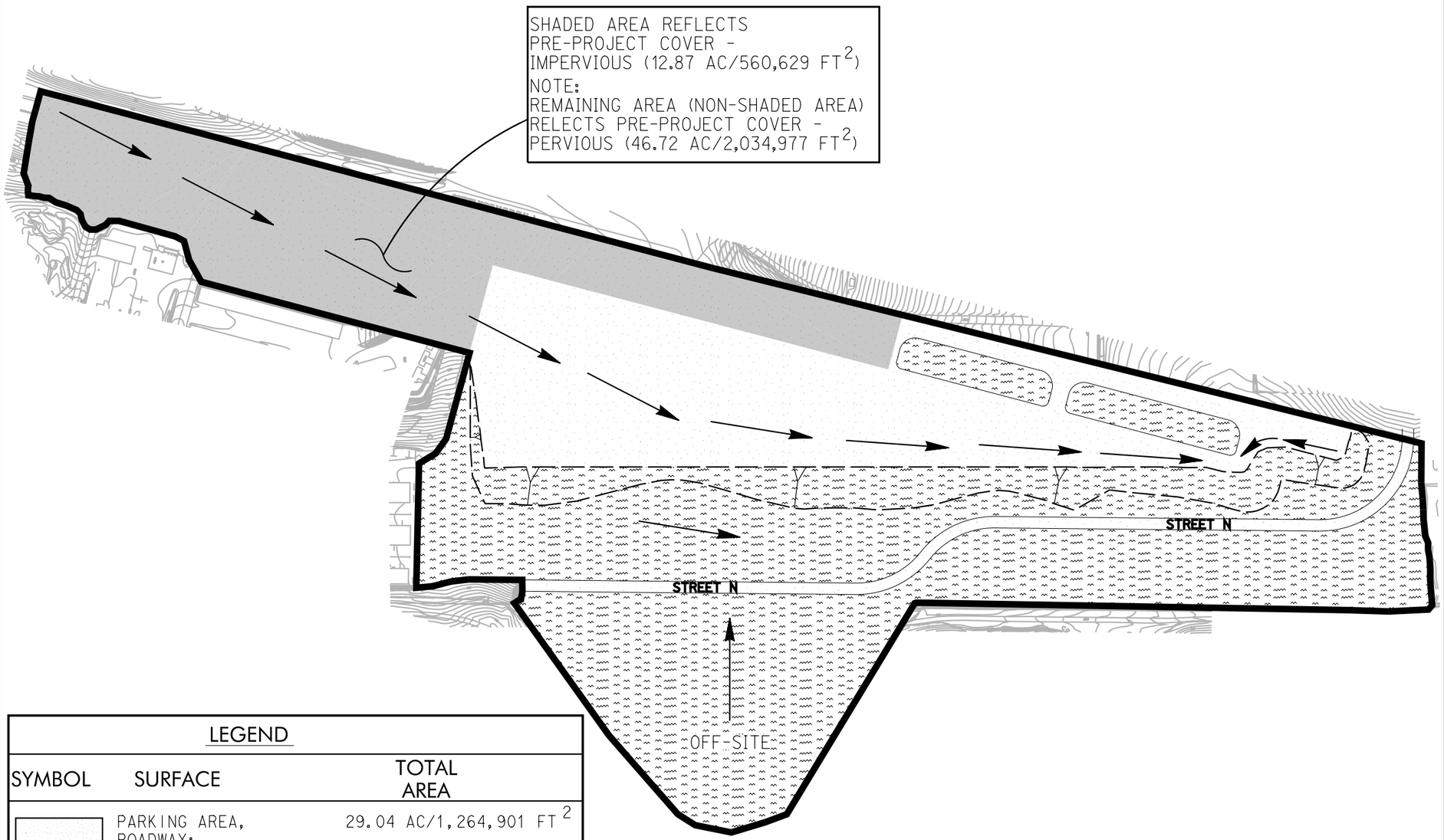
04-MAR-2011 19:32

APWA BMP SIZING CALCULATOR TRAINING
EXAMPLE #5 ~ LARGE COMMERCIAL
EXHIBIT 1 (SHEET 2 OF 2)



LEGEND

SYMBOL	SURFACE	TOTAL AREA
	PARKING AREA, ROADWAY: CONCRETE OR ASPHALT	29.04 AC/1,264,901 FT^2
	SLOPES, LANDSCAPING, PARK: LANDSCAPING	30.55 AC/1,330,705 FT^2

EXAMPLE # 5 ~ LARGE COMMERCIAL

EXAMPLE INPUT DATA

- ☐ DESIGN GOAL: TREATMENT + FLOW CONTROL
- ☐ RAINFALL BASIN: LAKE WOHLFORD
- ☐ POINT OF COMPLIANCE (POC): SOUTHWEST CORNER OF SITE
- ☐ DRAINAGE SOIL (HYDRLOGIC SOIL TYPE): TYPE D
- ☐ POST-PROJECT COVER: VARIES (SEE EXHIBIT)
- ☐ PRE-PROJECT COVER: PERVIOUS EXCEPT SHADED AREA - IMPERVIOUS (SEE EXHIBIT)
- ☐ PRE-PROJECT SLOPE: 3%

EXAMPLE PROBLEM

SCENARIO 1:

DESIGN POND BMP FOR PROPOSED PROJECT SURFACES AS SHOWN ON EXHIBIT.

POND DIMESNIONS (INPUT DATA):

SIDE SLOPE 1 (H:1)	3.00	
SIDE SLOPE 2 (H:1)	3.00	
DEPTH	5.0	FT
LOWER ORIFICE INVERT	0.00	FT
UPPER ORIFICE INVERT	3.0	FT
WEIR INVERT	5.0	FT
WEIR LENGTH	0.0	FT

ANSWER:

LOWER MAX. ORIFICE SIZE	5.0	IN
UPPER MAX. ORIFICE SIZE	28.0	IN
TOP AREA	75,596	FT^2
BOTTOM AREA	60,000	FT^2
VOLUME	338,992.3	FT^3
DRAWDOWN TIME	74.0	HRS
PERCENT DRAINED (96 HRS)	100	%

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GRAPHIC SCALE 1"= 300'

MARCH 8, 2011

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04-MAR-2011 19:37

County of San Diego

JACK MILLER
Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
Phone: (858) 505-6700 FAX (858) 505-6890
Phone: 1 (800) 253-9933
www.sdcdeh.org

ELIZABETH POZZEBON
Assistant Director

January 9, 2013

Mr. Wayne Chiu
San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4353

NPDES PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES FROM THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4) DRAINING THE WATERSHEDS WITHIN THE SAN DIEGO REGION (REGIONAL MS4 PERMIT) (ORDER NO. R9-2013-0001)

Dear Mr. Chiu:

The County of San Diego, Department of Environmental Health (DEH) has reviewed the proposed draft Order No. R9-2013-001 (Regional MS4 Permit), and offers the following comments:

The existing San Diego MS4 Storm Water permit includes vector-related language which is intended to raise awareness of the potential unintended public health risk resulting from mosquito production in certain storm water management devices, the proposed draft permit does not. The removal of the vector-related language raises a significant concern, and we request that it be placed back into the proposed draft to protect public health. Please note that the San Diego Regional MS4 permit was the first in the United States to include vector-related language, and ultimately resulted in improved language adopted into storm water permits throughout the State.

The vector-related language included in the existing MS4 permit represents a compromise that allows water quality goals to be met while minimizing the risk to public health. It recognizes that mosquitoes cannot completely be eliminated given the current water quality requirements. It further serves a critical public health purpose of maintaining an awareness of the potential unintended public health threat created by mosquitoes, and emphasizes the importance of proper maintenance of storm water management and treatment structures to minimize the potential for mosquito production and ultimately the spread of mosquito-borne diseases including West Nile Virus (WNV).

WNV continues to be a threat to human health, and has proven to be unpredictable. 2012 was the second worst year for WNV in the United States and California since it was introduced 13 years ago. Approximately 5,400 human illnesses were confirmed nationwide, with 243 deaths as of December 12, 2012. In California there were 464 confirmed cases in 2012 with 18 deaths as of December 24, 2012.

It is critical that the State and the RWQCB continue to include vector-related language in storm water NPDES permits to protect public health. It would be counterproductive and counterintuitive to strive to improve the quality of water for the benefit of public and environmental health only to create environments highly conducive to mosquitoes that have the potential to severely impact human and animal health from mosquito-borne diseases.

The County of San Diego's DEH respectfully requests that the Board restore the vector-related language in the proposed draft MS4 Permit. The following is the existing permit language from Section D - Urban Runoff Management Systems, Subsection 2 - Development Planning:

> f. *If not properly designed or maintained, certain BMPs implemented or required by municipalities for urban runoff management may create a habitat for vectors (e.g. mosquitoes and rodents). However, proper BMP design and maintenance can prevent the creation of vector habitat. Nuisances and public health impacts resulting from vector breeding can be prevented with close collaboration and cooperative effort between municipalities and local vector control agencies and the State Department of Health Services during the development and implementation of urban runoff management programs.*

In addition, the County of San Diego's DEH requests that to facilitate inspection of new BMPs, the San Diego Regional Permit require that a list of new storm water management and treatment units be submitted by the Permittees to their respective vector control agencies. The County requests that the Permit include the following language recently added to the draft Fact Sheet for the Los Angeles MS4 permit:

> *Monitoring studies conducted by the California Department of Public Health (CDPH) have documented that mosquitoes opportunistically breed in structural storm water Best Management Practices (BMPs), particularly those that hold standing water for over 96 hours. Certain Low Impact Development (LID) site design measures that hold standing water such as rainwater capture systems may similarly produce mosquitoes. BMPs and LID design features should incorporate design, construction, and maintenance principles to promote drainage within 96 hours to minimize standing water available to mosquitoes. This Order requires regulated MS4 Permittees to coordinate with other agencies necessary to successfully implement the provisions of this Order. These agencies may include CDPH and local mosquito and vector control agencies on vector-related issues surrounding implementation of post-construction BMPs.*

Thank you for the opportunity to submit comments on the proposed draft language for the MS4 Permit. If you have questions regarding the above comments, please contact Rebecca Lafreniere, Chief, at (858) 694-3595 or by E-mail at Rebecca.Lafreniere@sdcounty.ca.gov.

Sincerely,

JACK MILLER, Director

cc: Richard Crompton, Director, County of San Diego, Department of Public Works
Rebecca Lafreniere, Chief, County of San Diego, Department of Environmental Health, Community Health Division

County of San Diego

HERMAN REDDICK
PROGRAM MANAGER
(858) 974-5813
FAX (858) 974-5928

PUBLIC SAFETY GROUP
SAN DIEGO COUNTY FIRE AUTHORITY
5510 Overland Ave, Suite 250, San Diego, CA 92123

KEN MILLER & RALPH STEINHOFF
FIRE SERVICES COORDINATOR
(858) 974-5920
FAX (858) 974-5928

January 4, 2013

Mr. Wayne Chiu, P.E.
California Regional Water Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego California 92123-4340

Dear Mr. Chiu,

SUBJECT: Amendment of Draft Permit Language for Fire Fighting Activities – Tentative Order No.R9-2013-0001, Regional MS4 Permit, Place ID: 786088Wchiu

As a local authority affected by the most recent MS4 Draft Permit we feel compelled to provide written comments to ensure that water quality regulations are practical, cost-effective, and scientifically justified. Since the County Fire Authority will be directly regulated by the Regional MS4 Permit, we are concerned that public funds and critical personnel may have to be spent or resourced to comply with requirements that are unnecessary, and that this will ultimately reduce the emergency personnel and funding available for essential public services.

It is vital that the resources required to keep our communities safe from the threat of fire be solely purposed for that task. For this reason the 15 rural fire agencies within San Diego County have joined the County Fire Authority's call to action to protect water quality while controlling the mounting and unsubstantiated costs of increased regulation on local governments, business, and industry. As written, the Tentative Order will result in a significant and unprecedented level of regulation and cost without clear scientific basis or environmental benefit. The Fire Authority along with the 15 rural agencies believe that the language incorporated in a re-issued permit should not deviate from the current permit unless the RWQCB can provide clear evidence that emergency fire fighting activities and fire sprinkler line flushing significantly impact stormwater runoff, and that the increased costs associated with proposed changes are justified and feasible. Accordingly, we ask that the Regional Board honor the language in the existing permit and make no changes at this time.

In order to provide the best service possible the Fire Authority and its 15 participating agencies must be focused on emergency activities and not with implementing BMPs or removing debris caused by the emergency after the fact. This should be the sole responsibility of the entities owning or operating the sites or facilities for which the fire agencies are responding. The Fire Authority also believes that existing requirements are sufficient to ensure that the flushing of fire sprinkler systems has minimal impact to storm water quality and should not be prohibited. These activities exist for the safety of the public and the environment and should be continued in their current fashion pursuant to existing permit requirements.

We are hopeful that the final permit language will result in programs that make sense from a public safety, environmental and economic standpoint. Please contact Greg Schreiner, Fire Marshal, if you have questions or would like to discuss our concerns. His number is 858-495-5425, email is greg.schreiner@sdcounty.ca.gov

Sincerely,

Herman Reddick,
Program Manager

CC:
Acting Chairman Gary Strawn, San Diego Regional Water Quality Control Board (SD RWQCB)
Board Member Eric Anderson, SD RWQCB
Board Member Henry Abarbanel, SD RWQCB
Board Member Tomas Morales, SD RWQCB
Board Member Sharon Kalemkiarian, SD RWQCB
Executive Officer David Gibson, SD RWQCB

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DEC 18 2012

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ADMINISTRATIVE OFFICE

JAMUL DULZURA
COMMUNITY PLANNING GROUP
P.O. Box 613
Jamul, California 91935

December 14, 2012

Mr. Rich Crompton, Director
County of San Diego Department of Public Works
5510 Overland Ave, Ste 410
San Diego, CA 92123

SUBJECT: Comment – Tentative Order No.R9-2013-0001, Regional MS4 Permit, Place ID: 786088Wchiu

Dear Mr. Crompton,

The Jamul Dulzura Community Planning Group feels compelled to provide written comments on the draft San Diego Regional MS4 Permit to ensure that water quality regulations are practical, cost-effective, and scientifically based. While we are not directly regulated by the Regional MS4 Permit, we are concerned that public funds may have to be spent to comply with requirements that are not proven or effective, and that this will ultimately reduce the funding available for community projects and essential public services.

It is vital that the resources required to implement regulations are balanced with other public and environmental programs. For this reason we have joined the County's call to action to protect water quality while controlling the mounting and unsubstantiated costs of increased regulation on local governments, business and industry. As written, the Tentative Order will result in a significant and unprecedented level of regulation and cost without clear scientific basis or environmental benefit. The three main areas of concern in the draft permit are: 1) a far-reaching Bacteria Total Maximum Daily Load (TMDL), 2) additional requirements for development projects, and 3) performance standards that unnecessarily expose municipalities to third-party lawsuits. These requirements needlessly increase costs for regulated parties and may further constrain development in the region.

The cost to comply with the Bacteria TMDL is estimated between $2.6 billion and $4.9 billion for the named watersheds in the region over the 20 year TMDL compliance timeline, of which only 18 years remain. The numeric targets in this TMDL may never be attainable even if the County and other municipalities were to spend billions in public resources. This puts us in an untenable situation with the public, who will ultimately fund this effort. Technology simply does not exist to return urbanized watersheds back to pristine, "reference" conditions. The TMDL compliance targets must be attainable. The Bacteria TMDL requirement should not be incorporated into the MS4 Permit until there are more practical goals to work toward. We cannot ask the public to fund a program that will not succeed.

The cost of doing business in California has already pushed many businesses and developers out of the state. The draft permit will impose significant hardships on development. Permit requirements would require almost all development projects in the County to comply with hydromodification requirements, regardless of whether the projects themselves contribute to the problem. It also requires that new and re-development projects return site hydrology to pre-development conditions as opposed to pre-project conditions. Returning urban infill projects to conditions that existed under "natural", pre-urban conditions would be a substantial constraint to re-development. Over the last several years, local governments in San Diego have worked together with Regional Board staff and a host of technical experts to develop a Hydromodification Management Plan with reasonable and scientifically based standards. The

Regional Board recently approved that Plan. This draft permit ignores all of the good work invested in that Plan, which was developed at a significant cost to the public. In its place, it would impose new, one-size-fits-all requirements that impose a standard that is unrealistic and without scientific justification. The result of all these changes is that the structures built to mitigate development impacts will need to be bigger and will cost significantly more than the current approved program. Implementing these requirements would be an economic burden to our region and, are targeted at an unobtainable endpoint.

Accordingly, we would like for the Regional Board to honor existing plans, including the Hydromodification Management Plan. SANDAG has worked for many years through a comprehensive public process to develop the Regional Transportation Plan and Regional Comprehensive Plan that provides the framework for local General Plans. These plans recognize regional smart growth opportunity areas, including infill development. These are sound principals. Urban infill reduces aerial deposition which then reduces pollutant loading in urban runoff. Re-development is considered an environmentally preferable method of development. The MS4 permit should encourage re-development, retrofit landscapes, and green streets, through greater flexibility and reduced requirements rather than penalizing it with additional cost and constraints. To this end, any new regulations must be integrated into approved plans and must not be a burdensome, additional layer.

Finally, the draft permit includes performance standards that should be amended so that regulated municipalities are not unnecessarily exposed to third-party litigation. This Permit's receiving water limitations language is contrary to the intent of the federal Clean Water Act, which is to assure municipal agencies will be regulated to a reasonable standard. The State and Regional Water Boards have the discretion and a responsibility to ensure that water quality regulations are applied in a context that results in economic and environmental sustainability. It is imperative to reduce the threat of litigation when a municipality is engaged in a good faith effort to comply. The current receiving water provisions do not serve the environment, the public or the permittees. Public funds should be used to implement comprehensive programs that are proactive and adaptive to promote clean water goals.

Local government must have the flexibility to make policy decisions for the good of our residents. The 21 Copermittees in our region (the County, 18 cities, Port District, and Airport Authority) already spend close to $120 million a year to comply with current permit requirements. Heal the Bay's own report cards show that water quality at local beaches is improving. We would like to see the Regional Board adopt a permit that will be cost neutral and that local municipalities will have the flexibility to apply funding to priority areas.

We are hopeful that the final permit language will result in programs that make sense from both an environmental and economic standpoint. Please contact me if you have questions or would like to discuss our concerns.

Sincerely,

Michael Casinelli

Michael Casinelli, Chair
Jamul Dulzura Community Planning Group

CC:
Vice Chairman Gary Strawn, San Diego Regional Water Quality Control Board (SD RWQCB)
Board Member Eric Anderson, SD RWQCB
Board Member Henry Abarbanel, SD RWQCB
Board Member Tomas Morales, SD RWQCB
Executive Officer David Gibson, SD RWQCB
Mr. Wayne Chiu, SD RWQCB

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DEC 17 2012
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ADMINISTRATIVE OFFICE

Pala Pauma Valley Community Sponsor Group
P O Box 1273, Pauma Valley, CA 92061
760.481.4201

By: USPS

Monday, December 10, 2012

Mr. Rich Crompton, Director
County of San Diego Department of Public Works
5510 Overland Ave, Ste 410
San Diego, CA 92123

Dear Mr. Crompton,

Re: Comment – Tentative Order No.R9-2013-0001, Regional MS4 Permit, Place ID: 786088Wchiu

At its December 4, 2012 meeting the Pala Pauma Community Sponsor Group ("PPCSG") voted unanimously to support the action of San Diego County to protect water quality while controlling the mounting and unsubstantiated costs of increased regulation on local governments, business and industry. In particular, PPCSG supports the view that regulation based upon unproven science used in pursuit of parametric objectives that are apparently unattainable is poor governance and detrimamential to the interests of our community.

PPCSG believes that it is incumbent upon regulatory agencies to ensure that their enacted regulations are practical, cost-effective, and scientifically based. We are concerned that, otherwise, public funds may have to be spent to comply with requirements that are not proven nor effective, and that this will ultimately reduce the funding available for community projects and essential public services and increase the costs absorbed by trade and industry thereby inhibiting badly needed economic growth.

It appears that, as written, the Tentative Order will result in a significant and unprecedented level of regulation and cost without clear scientific basis or environmental benefit. The three main areas of concern in the draft permit are: i.) a far-reaching Bacteria Total Maximum Daily Load ("BTMDL"), ii.) additional requirements for development projects, and iii.) performance standards that unnecessarily expose municipalities to third-party lawsuits

PPCSG understands that the cost to comply with the Bacteria TMDL is estimated to be between $2.6 billion and $4.9 billion for the named watersheds in the region over the 20 year TMDL compliance timeline, of which only 18 years remain. The numeric targets in this TMDL may never be attainable even if government agencies were to spend billions in public resources, thereby increasing the costs of business and trade. PPCSG understand that available technology does not exist to return urbanized watersheds back to pristine, "reference" conditions.

Additionally, the Tentative Order requires that new and re-development projects return site hydrology to pre-development conditions as opposed to pre-project conditions. Returning urban infill projects to conditions that existed under "natural", pre-urban conditions would be a substantial constraint to re-development to the disadvantage of general Plans that seek to use infill development as a way of reducing urban sprawl. Further, the Tentative Order ignores all of the good work invested in the Hydromodification Management Plan developed at a significant cost to the public over the past years between the County and Regional Board staff and apparently seeks to impose a new, one-size-fits-all requirements standard that is unrealistic and without scientific justification. The result of all these changes is that the structures built to mitigate development impacts will need to be bigger and will cost significantly more than under the currently approved program.

PPCSG understands that receiving water limitations language is contrary to the intent of the Federal Clean Water Act, which is to assure municipal agencies will be regulated to a reasonable standard resulting in State and Regional Water Boards having the responsibility to ensure that water quality regulations are applied in a context that results in economic and environmental sustainability. PPCSG further understands that the 21 Co-permittees in our region (the County, 18 cities, Port District, and Airport Authority) already spend close to $120 million a year to comply with current regulations. PPCSG would like to see the Regional Board adopt Permit standards that will be cost neutral in a way that local municipalities will have the flexibility to apply funding to priority areas.

PPCSG is hopeful that the final permit language will result in programs that are rational from both environmental and economic standpoints -regulation within reason- and not impose upon our community the crippling disadvantages of regulation without reason.

Yours sincerely,

Charles Mathews, Chair,
Pala Pauma Valley Community Sponsor Group.

Copy: PPCSG members
Gary Strawn, Vice Chairman
Eric Anderson, SD RWQCB
Henry Abarbanel, SD RWQCB
Tomas Morales, SD RWQCB
David Gibson, SD RWQCB
Wayne Chiu, SD RWQCB
California Regional Water Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego California 92123-4340
Stephanie Gaines, DPW Watershed Protection Program (by email)

Julian Community Planning Group

P.O. Box 249, Julian, CA 92036

January 4, 2013

Ms. Stephanie Gaines, Land Use/Environmental Planner
DPW/Watershed Protection Program (M.S. 0326)
5510 Overland Avenue, Suite 410
San Diego CA 921123

Dear Stephanie;

First I want to thank you for meeting with our Planning Group to discuss the reissuance process regarding the region NPDES Permit (MS4 Storm Water) with particular focus on the Total Maximum Daily Load plan (TMDL) and the effects that may have on our community.

After reviewing the documents provided to us, discussing the issue with you, and considerable discussion by our Group, the following statement has been prepared to express the position of the Julian Community Planning Group:

1) As written, the tentative order MS4 will result in a significant, unprecedented and likely unattainable level of regulation and unsustainable cost. The tentative order includes:

A. Far reaching water quality improvements.

B. Performance standards that cannot conceivably be attained.

C. Transferring the state's responsibility of cost to the local agencies, including testing, liability, and enforcement.

D. Ignoring of existing plans developed by other agencies.

E. Requiring the co-permittee to comply with unknown conditions.

The far reaching water quality improvements likely never can be attained, especially in urban developed areas. Will the Regional Water Quality Control Board remove legal conforming residences to obtain pre-development conditions; or require all existing developments to retrofit in order to attain the requested standards?
There are also jurisdictions over which the co-permittee has no authority and therefore can not require compliance. Those include Caltrans, State lands and parks, Federal lands and parks, and Indian Reservations.

2) The San Diego Regional Water Quality Control Board is attempting to pass all cost and responsibility to the co-permittee. Why would any agency accept these liabilities and costs? The County of San Diego has estimated the cost to comply with the Bacteria TMDL alone to be between 2.6 and 4.9 million dollars.

3) The County of San Diego, Cities and SanDag have worked extensively to develop Transportation plans, regional comprehensive plans and general plans that address the concerns shown in the tentative order MS4. The San Diego Regional Water Quality Control Board has ignored this effort in the new proposed regulation.

4) The proposed MS4 permit requires the co-permittees to accept new regulation without knowledge of what they are or their impacts.

5) The requirement of returning all watersheds back to pristine reference level is just not practical nor feasible.

6) The County of San Diego should not require the portion of the County in the Colorado River Basin to comply with San Diego County Water Quality Control Board requirements. The issues and conditions in the Colorado River Basin are not similar to those in the western coastal portion of the County.

Thank you for including our comments in your presentation to the San Diego Region Water Quality Control Board.

Sincerely

Jack D. Shelver, Chair
Julian Community Planning Group

RAMONA COMMUNITY PLANNING GROUP
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December 14, 2012

Mr. Rich Crompton, Director
County of San Diego Department of Public Works
5510 Overland Ave, Ste 410
San Diego, CA 92123

Dear Mr. Crompton,

SUBJECT: Comment – Tentative Order No.R9-2013-0001, Regional MS4 Permit, Place ID: 786088Wchiu

As the Ramona Community Planning Group, a land use advisory group to the County of San Diego for land use issues in Ramona, we feel compelled to provide written comments on the draft San Diego Regional MS4 Permit to ensure that water quality regulations are practical, cost-effective, and scientifically based. While we are not directly regulated by the Regional MS4 Permit, we are concerned that public funds may have to be spent to comply with requirements that are not proven or effective, and that this will ultimately reduce the funding available for community projects and essential public services.

It is vital that the resources required to implement regulations are balanced with other public and environmental programs. For this reason we have joined the County's call to action to protect water quality while controlling the mounting and unsubstantiated costs of increased regulation on local governments, business and industry. As written, the Tentative Order will result in a significant and unprecedented level of regulation and cost without clear scientific basis or environmental benefit. The three main areas of concern in the draft permit are: 1) a far-reaching Bacteria Total Maximum Daily Load (TMDL), 2) additional requirements for development projects, and 3) performance standards that unnecessarily expose municipalities to third-party lawsuits. These requirements needlessly increase costs for regulated parties and may further constrain development in the region.

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Finally, the draft permit includes performance standards that should be amended so that regulated municipalities are not unnecessarily exposed to third-party litigation. This Permit's receiving water limitations language is contrary to the intent of the federal Clean Water Act, which is to assure municipal agencies will be regulated to a reasonable standard. The State and Regional Water Boards have the discretion and a responsibility to ensure that water quality regulations are applied in a context that results in economic and environmental sustainability. It is imperative to reduce the threat of litigation when a municipality is engaged in a good faith effort to comply. The current receiving water provisions do not serve the environment, the public or the permittees. Public funds should be used to implement comprehensive programs that are proactive and adaptive to promote clean water goals.

Local government must have the flexibility to make policy decisions for the good of our residents. The 21 Copermittees in our region (the County, 18 cities, Port District, and Airport Authority) already spend close to $120 million a year to comply with current permit requirements. Heal the Bay's own report cards show that water quality at local beaches is improving. We would like to see the Regional Board adopt a permit that will be cost neutral and that local municipalities will have the flexibility to apply funding to priority areas.

We are hopeful that the final permit language will result in programs that make sense from both an environmental and economic standpoint. Please contact Jim Piva if you have questions or would like to discuss our concerns.

Sincerely,

Jim Piva

JIM PIVA, Chair
Ramona Community Planning Group

CC:
Vice Chairman Gary Strawn, San Diego Regional Water Quality Control Board (SD RWQCB)
Board Member Eric Anderson, SD RWQCB
Board Member Henry Abarbanel, SD RWQCB
Board Member Tomas Morales, SD RWQCB
Executive Officer David Gibson, SD RWQCB
Mr. Wayne Chiu, SD RWQCB