



March 27, 2007

## **Comments to General Permit for Discharges of Storm Water Associated with Construction Activities (Construction General Permit)**

The following comments are prepared by Marvin H. Sachse, M.S. Environmental Engineering, M.S. Industrial Engineering, State of California Professional Engineer, Certified Professional in Erosion and Sediment Control, Certified Professional in Storm Water Quality, State of California Storm Water Group Monitoring Program Manager for SoCal GMP.

These comments concur with the Permit that the emphasis should be placed upon cost effective source control as the recommended Active Treatment Systems (ATSs) appear to be either technically or financially infeasible.

### ***Electro Coagulation***

EPA Document /540/S-93/504 "Emerging Technology Summary, Electro-Pure Alternating Current Electrocoagulation (ACE)" stated in 1993 that capital costs of \$300,000 for a 250 gpm unit, and treatment cost of \$0.50 per 1000 gallons were encountered. A 2004 paper by Dr. Abe Beagles entitled, "Electrocoagulation (EC) Science and Application," indicated that the higher the water's electro conductivity the more effective was electro coagulation. Dr. Beagles did not return telephone calls requesting clarifications on cost.

Aquamanzi, the Southern California representative of Powell Water Systems, Inc., an Electro coagulation (EC) manufacturer, quoted capital equipment costs between \$500,000 and \$1,000,000 to treat 600 gallons a minute. These prices do not include energy costs or fuel costs for 480 volts, 1,300 amps, 3 phase, 600 KW electrical generator system. This huge amount of electrical energy would not be available from the temporary electrical service provided at most residential construction sites. Therefore, a large electrical generating power plant would also be required, with a capital cost of \$60,000 to \$100,000.

Due to the extremely high equipment cost and complex technology, a budget for a trained operator would also be required, which further draws into question of the EC's applicability to treating construction site silt contaminated storm water. Assuming a 3.5 inch rain storm and treatment in 48 hours, capital equipment costs would range between \$4 million and \$6 million for a 30 acre site. This price does not include the additional costs for electrical generators, personnel, consumables at \$0.50-\$1.00 per 1000 gallons.

***Flocculation:***

Treatment cost for a 3.5 inch rainstorm, multiplied by a mandated 1.5 multiplier and treated in 48 hours would cost \$650,000 for four rainstorms a year on a 30 acre construction site. EC and flocculation treatment technologies do not appear economically feasible. The cost per construction site of \$650,000 per year, multiplied by the total number of construction sites, appears to be a huge price to pay on capital resources, without fully exploring practical source control BMPs, evaluating true impacts, practicality and accuracy of ALs and NELs, and implementation of other treatment scenarios that are not as costly.

***Page 3. 10: ATS only impacts turbidity and pH. The pH is indirectly impacted due to the acidic nature of the flocculant aide. The volume of the flocculant aide is small in comparison to the treated volume and the pH of the flocculant aide should have little or no consequence or impact on the receiving water. The Blue Ribbon Panel recognized that NELs would only be applicable for construction sites with ATS. The flocculation ATS does not directly treat TPH, and according to the findings of the Blue Ribbon panel it would, therefore, not be appropriate to apply the NELs to Total Petroleum Hydrocarbons (TPH). How then can NELs for TPH be established when ATS do not impact this analyte?***

Page 5. 16: Monitoring results indicating a construction related storm water or non storm water discharge represents an NEL violation. The discharger shall electronically enter the analytical results into the SWARM.

***An NEL exceedance, which is considered a Permit violation, placed in the public domain exposes the permittee to possible litigation under the Clean Water Act. Although, in fact, no proof of receiving water adverse impacts have been established nor has it been scientifically established, that the beneficial uses of the receiving water have been adversely impacted?***

***If the purpose of this Permit section is to obtain information regarding storm water discharges as opposed to exposing Permittee exceedances to punitive litigation and fines, then an alternate disclosure scheme should be devised. A system that provides amnesty for non egregious discharges would certainly be responded to by dischargers in a more positive manner than exposure to expensive fines and litigation.***

Page 5. 18: ALEER submitted with two consecutive AL exceedances for pH, Turbidity or TPH.

***Ibid. Page 5. 16.***

Page 5.19: Soils with more than 10% by weight of the particles smaller than 0.02mm (finer than medium silt) must implement an ATS or Source control measures in Section G to ensure that fine particles are not released into receiving waters.



***Please define receiving water, particularly if discharge is not released into a stream. Is an MS4 considered a receiving water? How does a Permittee obtain access to the receiving water? What if the receiving water is located miles away at a distant end of the MS4? What if a trespass is incurred? What scientific value would be obtained from contrasting site discharge water with receiving water that is no longer chemically related to the site's discharge water due to commingling with other storm drain discharges and exposure to physio chemical actions during transport to the receiving water? Is sampling required under unsafe conditions?***

***Is a SWPPP required at a low risk site if it is part of a larger development?***

***Page 8. 28: Receiving waters are defined differently for Cal Toxics, NTR and Ocean Plan. Which receiving water definition applies?***

***Page 8. 32: The word "discharges" should read "discharger."***

Page 11. IV. a. Acute toxicity shall have no difference with a 95% confidence between control discharge and 100 percent effluent (t-test). Applied as a monthly median of pass fail tests.

***Does 100% effluent refer to non diluted effluent?***

***What test method?***

***What if there is only one rain event?***

Page 11. IV. 4. b. Chronic toxicity of ATS shall be equal to 1.0 Tuc, where  $TUc = 100/NOEC$ .

***What test method?***

Page 11. IV. 4. c. pH shall be between 6.5-8.5 pH units.

***Why not 6.0-9.0 pH Units as per the U.S. EPA Storm Water Benchmarks.***

Page 11. IV. 4. d. Turbidity for ATS less than 10 NTU.

***Why not 500 NTU? Or 40 NTU per post construction AL/NEL? Why are different NTU ALs used? Why must active treatment water discharges be below the 500 NTU set for non treated water? If this is a receiving water issue then treatment should not matter.***

Page 12. VI. 6. Medium and high risk site discharges shall not be more than 0.2 pH units above or below pH of the receiving water.



***Most field pH meters are accurate to +/- 0.1 units. Test paper for pH is accurate to 0.5 pH units. 0.2 pH unit measurement is difficult to meet with these accuracies. Naturally occurring variations in a water body would cause pH excursions of several pH units. Is acid base neutralization a better answer to environmental concerns than naturally occurring pH buffering? Acid Rain lowers pH. New concrete storm drain raises pH. Storm water pH buffering is quite low, and would have little chemical impact related to pH on the receiving water.***

Page 12. VI. 7. ATS discharges shall not be more than 0.2 pH units above or below pH of the receiving water.

***Ibid. Page 12. VI. 6.***

Page 13. VII. 7. b. Existing dischargers shall electronically file all PRDs no later than 90 days after the Permit's adoption date. If project acreage subject to annual fees has changed, revised an annual fee is to be submitted within seven days.

***The SWARM system presently requires about 30 days from time of submission to receipt of Industrial WDID#. With the volume increase of Construction site Permits the SWARM system, judging by present performance, will be grossly overloaded unless resources are significantly increased. Difficulty may be encountered in completing the registrations process in the required 90 days.***

Page 13. VII. 3. SWPPP is to be modified in accordance with chapter IX, Attachment E, Monitoring Program and Reporting Requirements 90 day after Permit acceptance.

***If SWPPP and Monitoring plan review are not approved in 90 days will a WDID# still be issued?***

Page 13. VII. 4. Permit coverage for existing dischargers or new dischargers begins the date electronic PRDs are administratively accepted by the SWB or RWB or the effective date of the Permit.

***Is there a 90-day grace period?***

Page 15. IX. 2. If effluent monitoring indicates a Table 2 NEL is exceeded, the discharger shall electronically enter into SWARM the analytical results violating the NEL within 48 hours of receiving the results.

***What is the Turbidity NEL for non ATS discharges?***

***Ibid. comment Page 5.16***



Page 16. IX. 2. B.1. If upstream sampling data demonstrates that pollutant sources not related to construction activity are causing ALs exceedances, that is sufficient evidence to indicate that no additional BMPs or SWPPP implementation measures are required.

***Sampling data has demonstrated that high levels of naturally occurring minerals and metals, bound within undisturbed soil, leach into the storm water discharges, causing U.S. EPA Benchmark exceedances. Does the foregoing paragraph indicate that if there is sufficient soil sampling data establishing the presence of high levels of minerals and metals in the soil sufficient to cause Benchmark exceedances, that no additional BMPs are required and that no Permit violations have occurred?***

Page 16. IX. B. 2If the turbidity in the release equals or is less than 1.2 times the turbidity estimated to occur under the actual rainfall conditions as estimated in Attachment E, or equal or less than 1.2 times actual turbidity measured in the receiving water upstream of the discharge.

***Is it to be assumed from the two foregoing paragraphs that if the above conditions are met no additional BMP activity is required?***

Page 18. IX. D. 1. The discharger shall effectively manage Run-on from offsite, all runoff through the site, and all runoff that discharges off the site.

***Can Run-on water be diverted from the site?***

Page 18. IX. E. 4. Linear sediment controls shall be applied along toe, top, face, and grade breaks of exposed and erodible slopes to comply with sheet flow lengths in accordance with Table 3.

***Why are sediment controls to be placed at the top of an erodible slope? Water flowing on the top of a slope does not have sufficient volume or velocity to cause slope erosion. CASQA Handbook states, “.....below the toe or down slope of exposed and erodible slopes.”***

Page 19. IX. F. 6. At all times during the year, discharge shall appropriately protect and maintain all storm drain inlets and perimeter controls, runoff control BMPS and stabilized entrances/exits.

***Does the REAP reduce the “at all times during the year” aspects of BMP implementation, or does the interpretation of “appropriately protect” vary seasonally?***

Page 19. IX. F. 2. Public and private roads that receive storm water discharges shall be inspected daily or more frequently and swept or vacuumed as necessary.

***Are roads that do not receive storm water discharges not required to be inspected?***



***It should be noted that a multiplier of 1.5 times increases the storm sizing by 50%. What is the basis for this multiplier? Multiplying the 10 year 24 hour storm event by 1.5 raises the storm event to a 100 year storm event. This would seem to be an extreme design criterium. Why must the collected storm water be treated within 48 hours as opposed to 7 calendar days as provided in the previous permit? These restraints multiply treatment costs without any real benefit to the environment. Please refer to ATS comments on page 1 of this document.***

20. IX. G. 3. If a chemical additive is used, the supplemental report demonstrates that all additive will be removed prior to discharge or flow from the ATS, or that the chemical discharge of additives is in concentrations that will not affect the aquatic life in receiving water or violates the NELs. Sampling is described in Attachment E.

***It should be noted that the chronic and acute testing costs are almost \$2,000 per sample, and takes several weeks to obtain the results. Real time field tests should replace the requirement for acute and chronic toxicity testing.***

20. IX. G. 3.c. Provide 100% soil cover for all areas of inactive construction throughout the entire time of construction on a year round basis.

***Does the REAP apply?***

20. IX. G. 3. f. Provide stabilized construction entrance and limit all vehicle and foot traffic to those entrances.

***Foot traffic is difficult to restrict on a large construction site and should be removed from the Permit.***

22. IX. I. 1.a. Inventory products used and or produced.

***Is an inventory of competed houses to be prepared to comply with the provision to produce an inventory of products produced?***

22. IX. I. 1. b. Chem toilets to be bermed and kept from placement with curb and gutter on side walks or adjacent to storm drain.

***Why not on the sidewalk? Sidewalk placement of chemical toilets should be allowed except when placed in close proximity to a storm drain inlet.***

22. IX. I. 1. d. Cover waste disposal containers when not in use and prevent from overflowing.

***Waste containers are continually used during the day. Are they to be covered every night? Does REAP apply?***

22. IX. I. 1. e. Berm and protect stock piled waste material from wind and rain at all times unless actively being used.

***Does REAP apply? Define actively.***

23. IX. I. 2. g. ii. Identify and train appropriate spill response personnel.

***What kind of training? Part of SWPPP? How frequently?***

23. IX. I. 2. h. Concrete washout areas are to be lined and bermed to avoid leakage and overflow. To be positioned away from drain inlets or waterways and labeled.

***Does a roll off trash container require a berm? Do hay bale wash outs require berming? Berming could make wheel barrow access difficult.***

23. IX. I. 3.b. Equipment or vehicles to be fueled, maintained, or stored, are to be located in a designated area fitted with appropriate BMPs.

***Please define term of storage. Is overnight or weekend to be construed as storage?***

24. IX. J. 2. The discharger shall wash vehicles and streets in designated areas to prevent non-storm water discharges.

***How is a street washed in a designated area?***

24. IX. K. 1. The discharger shall ensure that the post-development runoff volume approximates the pre-project runoff volume for areas covered with impervious surfaces. RWB approval is required to use any structural control measures used to comply with this requirement.

***What is the approval process?***

24. IX. K. 2. Projects exceeding two acres shall preserve post construction drainage divides for drainage areas serving a first order stream or larger to ensure post-project time of concentration is equal or greater than post project time of concentration.

***Should be pre project time?***

24. IX. K. 3. For project exceeding 50 acres pre construction drainage pattern shall be preserved post construction drainage divides for drainage areas serving a first order stream or larger to ensure post-project time of concentration is equal or greater than post project time of concentration.

*Should be pre project time?*

25. XI. 2. REAPs are to be prepared by a qualified SWPPP Practitioner.

*Is this in conflict with X.A.1 requiring a SWPPP Developer? Can a SWPPP be prepared under the direction of a SWPPP Developer? Please clarify differences between a REAP and a SWPPP. Can a correctly written SWPPP function as a REAP?*

25. XI. 3. REAP is to be written for each storm event?

*This seems counter productive as long as the site remains in the same construction phase as defined in page 6. 25.*

30. XII.2. c. Storm water discharges from all stabilized areas contain turbidity less than 40 NTU.

*What basis is there for this number? Can the 500 NTU number be used or the background NTU or basin plan number be used?*

*Does self sustaining imply without irrigation?*

## **Attachment E**

*Page 61. E. 1. Is it correct to assume that samples are only collected for water that is discharged off site?*

*Page 61. E. 3. Ibid. Page 61. E. 1*

*Page 62. E. 4. Ibid. Page 61. E. 1*

*Page 62. E. 5. a. ii. Is it correct to assume that if ATS treated water is not discharged off site that sampling data is not required?*

*Page 63. E. 5. C. Acute and Total Toxicity Testing costs approximately \$2,000 per discharge sample and requires 2-3 weeks to obtain sample results.*

*Page 64. F. 1. Sampling a “worst quality” discharge does not provide a representative sample nor even an average sample. Sampling a worst case provides data of no scientific value and should not be used to evaluate the effectiveness of the site’s BMPs. The worst quality sampling strategy, in essence, punishes a facility that has deployed*



*resources to assure that 99.9% of a site is in compliance and through an inadvertent act, the entire site would be considered in violation of the Permit. This corruption of a “representative sample” collection concept as espoused in previous Permits appears to emphasize fines and litigation for an insignificant non representative discharge, as opposed to recognizing achievement for the vast majority of the BMP protected water discharged from a site. The worst quality sampling criteria should be removed from this Permit and replaced with the representative sampling criteria.*

*Page 64. F. 6. Does the term “immediately” upstream and down stream infer time or distance?*

*Page 67. K. 1. Please clarify if storm water monitoring records are to be kept for at least three years from time of observation or time of NOT filing.*

*Page 68. K. 1. e. Please clarify if there is conflict with K.1 in the time of record retention. K.1.e. requires a 5 year retention period for analytical results and K.1 requires a 3 year retention period of all Monitoring information and reports which includes the analytical results.*

*Page 68. K. 1. I. Paragraph IX.B.1.b. was not located in the Permit.*

*Page 68. L. 2. Please clarify if the locations of Sections I and J in the Standard Provisions refers to Page 44. Section V. B.?*

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