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Via E-mail & Facsimile Transmission

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
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Re: Northern California Carpenters Regional Council's Comments and Expert Submittal on the State Water resources Control Board's Proposed Draft General Permit For Discharges of Storm Water Associated With Construction Activities

Dear Chair Doduc, Vice-Chair Wolff, Board Members Baggett, Hoppin, Spivy-Weber, and Director Rice:

The following comments and attached expert submission are submitted on behalf of the Northern California Carpenters Regional Council ("NCCRC"). NCCRC is dedicated to improving the California building and construction trades industry. NCCRC strives to organize and improve working conditions and raise the standard of living on behalf of all workers, including efforts to improve the construction industry's protections of environmental values. Many of NCCRC's over 40,000 members enjoy fishing, hiking and boating on California's majestic rivers and streams and are deeply concerned with the state of California's salmon fisheries and the widespread degradation of many of the State's waters. NCCRC believes that the poor condition of California's salmon fisheries and rivers and streams is not only a measure of the state of the environment but also a measure of our members' quality of life. NCCRC believes that strong environmental commitments to reduce and eliminate storm water pollution from construction sites throughout the State will play an important role in our ongoing commitment to assist the building industry in being a force for environmental protection by not only providing California's residents with a high quality built environment but also assuring that our rivers and streams remain safe, clean, and healthy for our families and children.

Our review of the draft General Permit for Discharges of Storm Water Associated With Construction Activities indicates that the extra input and heightened public process provided to date by the State Board and its staff have resulted in a thoughtful and comprehensive approach to the shortcomings of the existing general construction permit. Staff has done an admirable job in balancing the needs expressed by various stakeholders to take into account certain practicalities and economic concerns, the need to provide for more certainty in both the implementation and enforcement of the general permit's requirements, and expanded transparency so that the interested public may play a constructive role in the application of the general permit to development proposals

around the State. However, NCCRC's review does reveal a few shortcomings in the permit that, if cured, would assure more consistent implementation of management measures, provide further inducement for construction sites to strive for implementing the best technologies available and better protect California's rivers and streams, especially the hundreds of waterbodies already degraded by damaging levels of sedimentation.

I. The State Board's Proposed Numeric Effluent Limit For Turbidity For Sites That Do Not Need Advanced Treatment Systems Should Be Lower To Reflect The Available Monitoring Data.

NCCRC agrees with the State Board's proposal to include numeric effluent limitations for turbidity. The proposed turbidity effluent limit of 1000 NTU for construction sites that are not employing an advanced treatment system ("ATS") is both feasible and would result in improved implementation of storm water management measures at construction sites currently achieved pursuant to the existing general permit. NCCRC believes, however, that a more careful analysis of the best available pollution control technologies economically achievable ("BAT") for turbidity being discharged from construction sites supports a lower turbidity effluent limit of 50 NTU.

A. The Turbidity Effluent Limitation Must Be Consistent With BAT.

To begin, it is not clear from the State Board's fact sheet whether the proposed turbidity limit is based on a BAT analysis, or a best conventional pollution control technology ("BCT") analysis.[1] The State Board should clarify that any effluent limitation for turbidity must be consistent with the Clean Water Act's BAT requirement.

BCT is only applicable to five specific pollutants listed by EPA at 40 C.F.R. § 401.16. Turbidity is not one of the five identified conventional pollutants. The five conventional pollutants are Total Suspended Solids ("TSS"), Oil & Grease ("O&G"), pH, biochemical oxygen demand ("BOD"), and fecal coliform. 40 C.F.R. § 401.16. Turbidity is not equivalent to TSS. *See* Comments Prepared by Carpenter Environmental Associates, Inc., Robert Pape, p. 4 (June 10, 2008) ("Pape Comments") (attached hereto). Discharges of those five pollutants are subject to BCT-based effluent limitations. All other pollutants, including turbidity, are either toxic or nonconventional and, when discharged, subject to BAT-based effluent limitations. *Id.*; 40 C.F.R. § 401.15.

Both the federal Clean Water Act ("CWA") and its accompanying regulations set forth specific criteria that the State Board should look to in applying the BAT requirement to turbidity discharges from construction sites. The CWA provides that:

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[1] In particular, the State Board should delete the Fact Sheet's reference to the best practicable control technologies, that treatment standard having been replaced by the BAT and BCT standards as of 1989. *See* 33 U.S.C. § 1311(b)(2). *Compare* Fact Sheet, p. 50.

> Factors relating to the assessment of best available technology shall take into account the age of equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, the cost of achieving such effluent reduction, non-water quality environmental impact (including energy requirements), and such other factors as the Administrator deems appropriate.

33 U.S.C. § 1314(b)(2)(B). *See also* 40 C.F.R. § 125.3(d)(3). Unlike the criteria for establishing a BCT–based effluent limitation, the BAT criteria do not require, indeed they preclude, consideration of any cost-benefit analysis. *Id. Compare* 40 C.F.R. § 125.3(d)(2).[2]

To the extent the State Board has not addressed each of the BAT criteria in the section of the Fact Sheet describing the proposed turbidity effluent limitation, NCCRC believes that the State Board should provide in the final Fact Sheet a specific explanation of each criterion. Any criticisms of the proposed effluent limitation based on an alleged need to conduct a cost-benefit analysis or any other cost comparison are misplaced. Although the State Board should consider the cost of achieving the proposed turbidity effluent limitations, the Board need not compare those costs to any expected turbidity reductions.[3]

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2 In establishing a BCT-based effluent limitation based on their BPJ, the permit writer must consider, in addition to "[t]he age of equipment and facilities involved; [] The process employed; [] The engineering aspects of the application of various types of control techniques; [] Process changes; and [] Non-water quality environmental impact (including energy requirements)," two cost-balancing criteria not found in the BAT criteria: "(i) The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived; [and] (ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources. . . ." 40 C.F.R. § 125.3(d)(2).

3 Nor does Water Code §§ 13241 and 13263 add on a cost-benefit analysis requirement to the State Board's establishment of BAT effluent limitations. Water Code § 13241 requires consideration of "economic considerations" when the State or Regional Boards are establishing water quality objectives." Water Code § 13263 requires the Boards to consider those factors when issuing waste discharge requirements under State law. However, Water Code § 13377 requires the Boards to issue WDRs under the NPDES permitting program that meet the federal standards set by federal law, including the BAT standard. *City of Burbank v. State Water Resources Control Board* (2005) 35 Cal.4th 613, 626. As the California Supreme Court explains:

> Because section 13263 cannot authorize what federal law forbids, it cannot authorize a regional board, when issuing a wastewater discharge permit, to use compliance costs to justify pollutant restrictions that do not comply with federal clean water standards. Such a construction of section 13263 would not only be inconsistent with federal law, it would also be inconsistent with the Legislature's declaration in section 13377 that all discharged wastewater must satisfy federal standards. . . . Moreover, under the federal Constitution's supremacy clause (art. VI), a state law that conflicts with federal law is 'without effect.' *Id.*

B. A Lower Numeric Effluent Limitation for Turbidity Is Supported By The Existing Monitoring Data Of Construction Storm Water Management Practices And The BAT Criteria.

NCCRC retained Carpenter Environmental to review the existing management practice data available for the construction industry. Consistent with the industry representatives' assertions that the use of existing management practices is effective, the existing data shows that, when erosion control and storm water management measures are fully implemented and carefully maintained, they are capable of reducing turbidity in storm water by a significant amount. See Pape Comments, p. 5 ("a discharge limit of 50 NTUs is clearly achievable using economically available BMP technology "). The effluent limitation for turbidity should reflect that effectiveness. A conservative analysis of the existing data, including areas of high erosivity and small soil particles, shows that any properly implemented suite of management practices will achieve turbidity levels not exceeding 50 NTU. *Id.*

II. The Lower Turbidity Limit Proposed For Sites That Choose To Employ An Advanced Treatment System Should Apply To All Larger Construction Sites.

The proposed permit proposes an effluent limitation of 10 NTU for those construction sites that choose to treat turbidity discharges with an advanced treatment system ("ATS"). Rather than encourage the use and further development of ATSs, NCCRC is concerned that the proposed permit will have the contrary effect of dissuading sites from using ATSs. NCCRC believes that ATSs are feasible for larger construction sites exceeding five acres and, employing the BAT criteria, ATSs are warranted by their exponentially improved turbidity quality. See Pape Comments, pp. 5-6. The Storm Water Panel of Experts acknowledges that ATSs currently are used on a significant number of larger construction sites. The Panel opines that ATSs appear feasible for sites over five acres or greater. Storm Water Panel Report, p. 15 ("It is the consensus of the Panel that active treatment technologies make Numeric Limits technically feasible for pollutants commonly associated with stormwater discharges from construction sites (e.g. TSS and turbidity) for larger construction sites"). Carpenter Environmental "recommend[s] that the SWRCB require all construction sites that disturb 5 acres or more at any one time be subject to the 10 NTU turbidity limitation achievable with an ATS." Pape Comment, pp. 5-6. NCCRC believes that the State Board should adopt a permit that encourages, rather than discourages, the use of this technology. NCCRC recommends that the State Board should set an effluent limitation for turbidity of 10 NTU for all construction sites exceeding five acres in size and which discharge either 1) to a waterbody listed as impaired for turbidity or sediment or 2) to a waterbody that is critical habitat or spawning habitat for salmonids.

NCCRC has reviewed the Board's toxicity requirement for ATS units and believes that, to the extent there is any potential for release of the polymers used in these systems, the heightened analysis of the polymers used in specific units and the proposed limit appear to address that risk. The State Board should include requirements that

address any concerns regarding the qualifications or training of operators of any ATS unit.

III. The pH Effluent Limitation Should Apply At All Times Up To A Specific Design Capacity.

The proposed permit undermines the clarity and certainty afforded by the proposed numeric limitation for pH by introducing a subjective timing criterion. The proposed permit currently would only apply when there is a "high risk of high pH discharge." Proposed Permit, Finding 12. At footnote 5 of the Proposed Permit, it proposes to define "[a] period of high risk of pH discharge . . . as a project's complete utilities phase, complete vertical build phase, and any portion of any phase where significant amounts of materials are placed directly on the land at the site in a manner that could result in significant alterations of the background pH of the discharges." Although NCCRC agrees that these phases and the presence of exposed materials would be the likeliest times that the proposed pH limitation may be exceeded at a construction site, NCCRC believes that leaving it to the site to determine what are either significant amounts, an acceptable manner of placement, or significant alterations may undermine the implementation and effectiveness of the proposed limitation. The monitoring results should speak for themselves. If a discharge exceeds the proposed range of pH readings, that should be the measure of whether amounts, placement, or alterations of background pH are significant.

IV. The Permit Should Relieve Permittees From Complying With Numeric Effluent Limitations For Extreme Storm Events To The Extent The Proposed Limits Become More Stringent.

NCCRC believes that the State Board should include a specific "upset" provision in the permit that correlates to an appropriate storm event design for all measures implemented under the permit. NCCRC believes an appropriate range of design capacity standards that the Board should consider is not less than a 10-year, 24-hour storm event design and up to a 25-year, 24-hour storm event.

V. Some Photographic Monitoring of Visual Observations Should Be Required.

The permit's requisite visual observations should be reinforced with digital photographic documentation. At a minimum, photos of each discharge location during a sampling event should be taken as well as any dry or wet weather observations where a management measure has failed or discharge occurs. Such photographs should be attached to the visual inspection reports.

VI. Risk 2 Sites Should Be Required To Sample Receiving Water When Action Levels Are Exceeded.

The proposed permit currently requires a site to sample receiving water quality when they measure an exceedance of the 1000 NTU turbidity effluent limitation. As the permit states at several points, issues regarding compliance with water quality standards may be present where an action level is exceeded. In addition, the proposed permit explains that "[a]nother purpose of NALs is to provide information regarding construction activities and water quality impacts. . . . We also hope to learn more about the linkage between effluent and receiving water quality." Fact Sheet, pp. 48-49. if the goal of learning more about the linkage between effluent and receiving water quality is to be achieved in part through the application of action levels, then receiving water samples by Risk Level 2 sites should be triggered whenever an exceedance of an action level is measured.

A. The State Board Should Specifically Address The Process For Identifying The Location Of Receiving Water Discharges Where A Discharge Is First Released To A Storm Drain System.

One question which the State Board should address regarding the proposed receiving water sampling is how a construction site will identify its receiving waters. For those sites that discharge directly into a creek or river, appropriate receiving water sampling locations should be reasonably self-evident. However, where discharges occur to a storm drain system, the State Board needs to spell out a process for determining the location of the discharge to a receiving water. NCCRC recommends that, where discharges are to a storm drain system, the permit's monitoring requirements include reviewing the pertinent municipalities storm drain maps to identify the location of the discharge to receiving waters.

B. Receiving Water Monitoring Should Be Designed To Measure Compliance With Applicable Water Quality Standards For pH And Turbidity.

In addition, the permit's monitoring requirements for pH and turbidity in receiving waters should reflect the Basin Plan standards that are based on relative increases in those parameters over background levels. Because the standards prohibit relative increases in those parameters, effective monitoring of the Basin Plan standards for turbidity and pH require at least two samples – one upstream and one downstream of the discharge location – in order to determine whether the discharge is causing or contributing to a violation of the applicable standard. The permit should specify those monitoring requirements.

Lastly, whether triggered by an exceedance of turbidity or pH, the receiving water monitoring by Risk Two sites should begin the same day such exceedance is first measured and then, as proposed by the permit, continue for the remainder of the season.

Whether or not the initial exceedance is also resulting in a violation of applicable water quality standards should be answered by the permit's monitoring requirement.

VII. Heavy Metals And Other Potential Pollutants Should Be More Specifically Addressed By The Permit.

Although the proposed permit requires construction sites to identify, monitor and apply BAT to other nonvisible pollutants that may be present at the site, the permit appears to sidestep potential pollutants found in disturbed soils at construction sites, including, for example, heavy metals. The permit should provide a broader list of action levels for the more common heavy metals. Such levels initially should be based on EPA's published benchmark values. 65 Fed. Reg. 64767 (Oct. 30, 2000).

VIII. Responses to Questions Posed by Vice-Chair Wolff.

Prior to the June 4th Workshop, the Board circulated three questions posed by Vice-Chair Wolff. NCCRC has the following responses.

1. The permit attempts to balance the need for simplicity and transparency with the need to sensitively address widely different physical conditions across sites. In what parts of the draft permit do you think complexity is most and least valuable?

Complexity is most valuable in the permit's effort to have the sites better characterize the risk they pose to water quality. The required information should lead to more informed and more effective decisions about management measures selection and placement. Complexity appears least valuable in how the permit proposes to address ATSs. By requiring numerous hurdles, additional monitoring and more stringent limitations on a voluntary basis, the permit would appear to discourage the most effective treatment available for turbidity and possibly other pollutants in construction site discharges. In addition, the complexity of establishing action levels for turbidity also seems more complex than is necessary. Given the effectiveness of well designed and well maintained management practices and the evidence supporting a lower numeric effluent limitation for turbidity, a turbidity action level should be set at a correspondingly lower number.

2. Our scientific understanding of when and where a management practice is best is limited. Self monitoring for compliance will not necessarily increase our understanding due to variations between practitioners and for other reasons. Are you interested in creating a scientifically valid database on management practice performance via rigorous third party 'random' monitoring in lieu of self-monitoring and at least partially paid for by permittees?

NCCRC does not agree that our understanding of management measures is as limited as this question suggests. NCCRC would support more vigorous site inspections by the State and Regional Boards, including heightened monitoring designed to produce

scientifically-valid data analyzing the effectiveness of BMPs. However, truly useful data for future adjustments to the permit's limitations would have to focus on certain representative sites and be extended for a sufficient number of events at each site to provide the necessary range of data. It does not seem realistic that a third-party team could ever be provided the necessary resources sufficient to replace the self-monitoring system.

3. Ignoring the numbers and how they are calculated, do you think that the tiered compliance structure of the permit is a desirable or undesirable feature? By tiered structure we mean action levels 'backstopped' by higher numeric effluent limits that are intended to simplify enforcement against egregious violations.

NCCRC generally agrees with the tiered compliance structure for smaller construction sites and larger sites that are not within listed watersheds or that do not discharge to spawning habitat for salmonids or critical habitat, though the turbidity limit should be lowered to be consistent with the available performance data for well-designed and well-maintained management practices. As for larger sites in sensitive or impaired waters, the tiered approach should yield to a turbidity limit of 10 NTU. The permit should at least begin to put two tiers in place for nonvisible pollutants by at a minimum establishing action levels and including monitoring on which effluent limitations for some of those pollutants would be based during the next permit renewal.

NCCRC appreciates the Board's consideration of these comments on the proposed general permit.

Sincerely,

Michael R. Lozeau
Lozeau | Drury LLP
for Northern California Carpenters Regional Council

cc: Alexis Strauss, EPA Region 9

Comments on State Water Resources Control Board National Pollution Discharge Elimination System, Draft General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities

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June 10, 2008
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Background

The California State Water Resources Control Board, Division of Water Quality has issued for public comment a proposed National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Permit). Carpenter Environmental Associates, Inc. (CEA) has been retained by Lozeau Drury LLP to review the draft permit and offer these comments.

The permit proposes regulating discharges of turbidity from construction sites with more than one acre of land disturbance. The draft permit sets numeric action levels (NALs) and numeric effluent limitations (NELs) for turbidity, as well as special numeric limits for Advanced Treatment System (ATS) discharges.[1] An ATS is a treatment system which uses chemical coagulation, chemical flocculation or electrocoagulation to reduce turbidity. The draft permit establishes turbidity NALs based on individual site-specific requirements (i.e. rainfall amount and intensity, runoff peak flow and volume, soil erodibility, slope length and steepness, and erosion and sediment control measures); and sets NELs at 1,000 NTUs for all sites except for sites that employ ATS. For sites that employ ATS, effluent turbidity has been set to 10 NTUs. In order to achieve the draft permit turbidity limit of 1,000 NTU on all construction sites disturbing more than one acre that do not install ATS, Best Management Practices (BMPs) will need to be employed. It is our opinion that the NEL of 1,000 NTU can be reduced to 50 NTU since Best Management Practices (BMPs) exist that will reduce turbidity discharges to 50 NTU or under. Further, it is our opinion that the State Water Resources Control Board (SWRCB) should consider requiring ATS for sites larger than 5 acres. The following supports these opinions.

[1] California State Water Resources Control Board NPDES General Permit for Storm Water Discharges Associated Construction and Land Disturbance Activities

Effectiveness of BMPs for Sediment and Erosion Control during Construction

Proper implementation and maintenance of individual BMPs may or may not meet NEL or NAL requirements for turbidity. However, by combining BMPs, construction sites are capable of achieving turbidity levels in storm water leaving the site at 50 NTU. For construction sites of up to five acres in size, such combinations of BMPs achieving that level of turbidity in storm water discharges would constitute the best available technology economically achievable ("BAT").

For example, common BMPs implemented to remove sediment and turbidity from stormwater during construction of sediment traps and sediment basins during construction. A study by Markusic and McLaughlin to examine the effects of designs of sediment retention basin efficiencies, examined effluent discharges from sediment traps and sediment basins in use at highway construction and private development sites in Piedmont, North Carolina.[2] The turbidity results were as follows:

- A standard 10-year rainstorm trap: 220 NTU to >30,000 NTU
- A 25-year rainstorm basin with a skimmer: 16 NTU to 4200 NTU
- A standard 25-year rainstorm trap: 325 NTU to 29,771.
- A standard 10-year rainstorm trap: 406 NTU to 15,962 NTU
- A standard 10-year rainstorm trap with standing pool: 350 NTU to 5,568 NTU
- A standard 10-year rainstorm trap with silt fence baffles: 451 to >30,000 NTU.

Based on this study, sediment traps and sediment basin BMPs alone will not meet a turbidity effluent level of 50 NTUs but they also will not meet the Draft Permit NALs and NELs all of the time.

Another study conducted by Washington State Department of Ecology in Washington State, evaluated turbidity in stormwater run-off from 160 construction sites in Washington State employing either storm drain inlet protection, stormwater ponds/basins,

[2] Effects of Design Changes on Sediment Retention Basin Efficiency, Markusic, McLuaughlin, 2007

or protective cover of disturbed soils either alone or in combination with one another. Mean turbidity discharges for these sites ranged from 35.8 to 61 NTU.[3] This indicates that non-ATS BMPs can achieve effluent turbidity levels well below 1000 NTUs.

A study on stormwater discharges from slopes conducted by Horner and others, showed that bare slopes produced turbidity measurements of 60 to >1,000 NTU (1,000 was the upper detection limit). After applying a covering of wood mulch paired with a bonding agent and grass seed, the mean turbidity discharged dropped to 21 NTUs with a maximum of 73 NTUs after the seed had sufficient time to germinate.[4] Therefore, BMPs exist for bare sloped areas that can reduce the turbidity to well below the draft permit's proposed turbidity limitation of 1000 NTUs.

Silt fencing is probably the most common BMP used on construction sites. While silt fences are relatively effective in capturing TSS they are almost totally ineffective in reducing turbidity. Turbidity and Total Suspended Solids (TSS) are different parameters. Turbidity is the measure of the optical property that causes light to be scattered and absorbed by particles and molecules rather than transmitted in straight lines through a water sample, whereas, TSS is a measure of the particles that will be retained on a specific-size filter.[5] Turbidity is affected by more than just particle concentration. Water color due to dissolved solids and temperature, as well as the shape, size and mineral composition of particles can significantly affect a turbidity reading.[6]
A study of silt fences showed that although the fences were able to capture 86% of the TSS, they only reduced turbidity by 3%.[7] This is likely due to the efficient capture of large particles (TSS), while smaller clay particles responsible for turbidity easily pass

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[3] Stormwater Quality Survey of Western Washington Construction Sites, 2003 – 2005, Washington State Department of Ecology, Lubliner, Brandi and Golding, Stephen, August 2005
[4] Improving the Cost Effectiveness of Highway Construction Site Erosion and Pollution Control. Horner, R., Guedry, J., Kortenhof, M.H., 1990
[5] Environmental Protection Agency Guidance Manual Turbidity Provisions, April 1999
[6] Using Turbidity to Determine Total Suspended Solids in Urbanizing Streams in the Puget Lowlands, James J. Packman, Karen J. Comings, Derek B. Booth
[7] Improving the Cost Effectiveness of Highway Construction Site Erosion and pollution Control, Horner, R.R., Guedry, J., and Kortenhof, M.H., 1990

through the fencing; therefore, the use of silt fences on sites containing erodible soils will not reduce turbidity alone.

These examples clearly show the level and variability of turbidity discharges that individual, non-ATS BMPs can produce. BMPs such as silt fences will not contribute to removal of turbidity and most likely will not produce discharges that are at or under site-specific NAL nor NEL and other BMPs, such as sediment traps/basins, may only produce discharges below the proposed permit's NAL and NEL part of the time. Both of these situations would then require the installation of additional BMPs. Based on the collective results from 160 sites noted above, a discharge limit of 50 NTUs is clearly achievable using economically available BMP technology.[8] Additionally, other municipalities in California have set turbidity level requirements below the 1000 NTU level. The Updated NPDES Permit for Storm Water Runoff Associated with Construction Activity in the Lake Tahoe Hydrologic Unit (Lahontan Region of the California Regional Water Control Quality Board) Permit requires discharges that impact surface waters to contain a maximum of 20 NTU.[9] Therefore, the draft Permit NEL limit of 1000 NTUs is high and can be lowered to 50 NTUs reasonably.

The Use of ATS

Setting the ATS standard for turbidity at 10 NTU is practical due to these treatment units' removal abilities. However, having no regulations or requirements for their use and by setting a turbidity standard at 100 times greater for sites not employing an ATS, may discourage using ATSs. According to the *Storm Water Panel Recommendations to the California State Water Resources Control Board: The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities*, ATSs are typically found employed on construction sites

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[8] Stormwater Quality Survey of Western Washington Construction Sites, 2003 – 2005, Washington State Department of Ecology, Lubliner, Brandi and Golding, Stephen, August 2005

[9] California Regional Water Quality Control Board – Lahontan Region, Board Order No. R6T-2005-0007, Updated Waste Discharge Requirements and NPDES General Permit No. CAG616002 for Discharges of Storm Water Runoff Associated with Construction Activity Involving Land Disturbance in the Lake Tahoe Hydrologic Unit, March 10, 2005.

disturbing five or more acres, and although they are technically feasible for sites of any size, the cost effectiveness of active treatment systems is greatly enhanced for large drainage areas.

The New York State Department of Environmental Conservation State Pollution Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity requires prior written approval from the Department if five acres of soil will be disturbed at one time.[10] We recommend that the SWRCB require all construction sites that disturb 5 acres or more at any one time be subject to the 10 NTU turbidity limitation achievable with an ATS.

[10] The New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity, GP-02-01, NYCDEC, Effective Date: January 8, 2003

CARPENTER ENVIRONMENTAL ASSOCIATES, INC.
CEA ENGINEERS, P.C.

CURRICULUM VITAE

ROBERT J. PAPE, P.E., SENIOR ENGINEER

EDUCATION
B.S., Chemical Engineering, Rutgers University: College of Engineering, 1989

REGISTRATIONS
Registered Professional Engineer (Chemical), New York
Certified Wastewater Treatment Plant Operator, Grade 4-A, New York

CONTINUING PROFESSIONAL EDUCATION
Advanced Wastewater Treatment
Programmable Controller Training
Wastewater Flow Measurement Training
Activated Sludge Training
Wastewater Treatment – Nitrification and Denitrification Training
Treatment of Municipal, Hazardous and Toxic Wastewater Course

PROFESSIONAL HISTORY
Research Manager, Metcalf and Eddy of New York 2001 – 2006
Responsibilities include:

Wastewater Engineering/Operations

- Supervising a staff of research engineers, operations, maintenance, and laboratory personnel involved in wastewater treatment studies at a 6 pilot (0.2-MGD) research facility.
- Researching innovative technologies such as Anammox including designing 2000 gallon pilot demonstration unit, developing operational guidelines, and operations of regeneration of the culture
- Identify the effects on performance and kinetics of a step-feed BNR reactor being fed various supplemental carbons types and optimize supplemental carbon addition. Assisted in data anlysis and in model calibration with BioWin™.
- Investigating optimal treatment technologies for a BNR process waste stream to produce a supplemental carbon (primary sludge fermentate & acid phase digestion.)
- Investigating separate treatment of high ammonia side streams (centrate) with a focus on using the treated effluent to supplement main BNR process through the seeding of nitrifying and methylotropic biology.
- Studying the influence biological and chemical foaming have on the BNR process and researching and developing technologies to eliminate foaming
- Investigating the "Proof-of-Concept" for proposed experimentation to ensure viability with respects to economics and scale-ability to full-scale implementation.
- Developing and/or reviewing experimental designs and protocols for all research conducted by the pilot facility (i.e. developing carbon control with ORP study).
- Produced research reports for submission to the NYC DEP and to an overseeing technical advisory committee, for State and National publication and review.

- Designing modifications of existing pilot facilities to economically expand operational flexibility and improve operational stability.

Facilities Manager, Roy F. Weston Inc, Staten Island, New York, 1999 – 2001

Leachate Engineering/Operations

- Facilities manager for the Fresh Kills Landfill Leachate Treatment Plant and collection and containment system with an annual budget exceeding $2.3 million.
- Maintaining the state-required SPDES permit conditions for the biological-chemical-physical treatment facility. Developing work plans for DMR excursions to identify and rectify problematic sources.
- Conducting treatability studies to confirm the efficacy of treating a condensate stream from the landfills gas generation plant.
- Managing electrical and mechanical contracts at the Fresh Kills landfill leachate treatment plant during two upgrades, while maintaining plant performance.

Process Control Area Engineer: New York City DEP, 1989 – 1999

Wastewater Engineering/Permit Compliance/Operations

- Ensuring that the process was maintained during upgrades at the Jamaica and Newtown Creek plants and developed contingency plans to maintain process during reactor outages. Drafted notifications to state and internal authorities related to discharge monitoring violation considerations.
- Reviewing design modifications and operational recommendations with respect to plant peformance including reviewing a short hydraulic residence time step-feed modified aeration system at the Newtown Creek plant and polymer use for thickening and final clarification improvements at various treatment locations.
- Developing the City's first technical specifications for a choosing polymer for the NYCDEP sludge dewatering process.

Process Control Engineer: New York City DEP, 1989 – 1999
Responsibilities include:

Wastewater Engineering/Permit Compliance/Operations

- Served as process control engineer for the Oakwood Beach plant and dewatering facility, the Port Richmond plant and North River plant.
- Responsible for maintaining operations to produce quality effluent with in State Permit Standards.

PUBLICATIONS AND PRESENTATIONS

"Optimization of Strategies for Separate Centrate Treatment via Partial Nitrification and Denitrification in New York City Water Pollution Control Plants" Annual Water Environment Federation's Technical Exhibition and Conference, November 2005, Metcalf and Eddy, (with M. Regan, K. Chandran and G. Bowden)

"Enhanced Step-Feed Biological Nutrient Removal via Simultaneous Nitrification and Denitrification at New York City WPCPs," Annual Water Environment Federation's Technical Exhibition and Conference, October 2004, Metcalf and Eddy, (with K. Chandran and B. Stinson).

"Supplemental Methanol Optimization for Enhanced Performance and Kinetics in a Step-Feed BNR Reactor," Annual Water Environment Federation's Technical Exhibition and Conference, October 2004, Metcalf and Eddy, (with K. Chandran, I. Ezenekwe, and B. Stinson).

"Hybrid Step-Feed BNR Configuration for Enhanced Nutrient Removal at NYC WPCPs," Annual Water Environment Federation's Technical Exhibition and Conference, October 2004, Metcalf and Eddy,(with K. Chandran, I. Ezenekwe, and B. Stinson).

"Optimization and Implementation of Froth Control and Prevention Strategies at NYC WPCPs during BNR Operation," 76th Annual Water Environment Federation Conference, 2003, Metcalf and Eddy, (with K. Chandran, I. Ezenekwe,L .C arrio,K .G opalakrishnan, J. Anderson and B. Stinson).

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