CSRWG 9 June 2008
Cullipher

From: ron cullipher [mailto:rcullipher@stroudengineer.com]
Sent: Thursday, June 05, 2008 12:58 PM
To: George Givens (Research)
Subject: CSRWG- COASTAL STORMWATER RULES

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MEMORANDUM
TO: COASTAL STORMWATER STAKE HOLDERS GROUP
FROM : RONALD D. CULLIPHER, PE
DATE: JUNE 5, 2008
SUBJECT: 15A NCAC 02H .1005 STORMWATER REQUIREMENTS COASTAL COUNTIES REVISED 5/29/08 BY NCDWQ THRU THE STAKE HOLDERS PROCESS

AS AN ENGINEERING CONSULTANT THAT HAS WORKED WITH THE COASTAL STORMWATER RULES SINCE THEIR ORIGINAL INCEPTION IN 1988, MY BIGGEST CONCERN OF THE ORIGINALLY PROPOSED STORMWATER RULES AS THEY CAME OUT FROM THE EMC WAS THE NUMBER OF INDIVIDUAL PROPERTY OWNERS THAT UN-KNOWINGLY WERE TO BE EFFECTED BY THE RULES AND THE UNDUE HARDSHIP THAT THE RULES WERE TO PLACE ON THEM.

PROPOSED CHANGES SUCH AS CHANGING THE 10000 SF OF DISTURBANCE LANGUAGE TO 10000 SF OF BUILT UPON GOES A LONG WAY TO MINIMIZE THOSE CONCERNS. I COMMEND THE STAFF FOR THIS ADJUSTMENT.

IN THE ORIGINAL VERSION OF THE PROPOSED RULES, ISOLATED WETLANDS, 404, AND COASTAL WETLANDS WERE TO BE OMITTED FOR CALCULATION PURPOSES ON LOW-DENSITY PROJECTS. WITH THE LOW-DENSITY THRESHOLDS BEING REDUCED TO 12% OR 24% RESPECTIVELY, DEPENDING ON WATER CLASSIFICATIONS DOWN STREAM, THE NUMBER OF NEW LOW DENSITY PROJECTS WILL BE SIGNIFICANTLY REDUCED, WHICH IS ONE OF THE MAIN GOALS OF THIS RULE RE-WRITE. STAFF HAS RIGHTLY RECOMMENDED THAT ISOLATED AND 404 WETLANDS BE INCLUDED IN THE CALCULATIONS. **I WOULD SUGGEST THAT A POLICY SIMILAR TO THE CURRENT WETLANDS POLICY COULD BE UTILIZIED FOR COASTAL HIGH MARSH WETLANDS, SUCH THAT A TOTAL OF 12% OR 24% OF THE COASTAL MARSH COULD BE COUNTED IN DENSITY CALCULATIONS OR THE 100' STRIP AS CURRENTLY USED BY DWQ FOR ALL WETLANDS.** WHILE POTENTIALLY UNPOPULAR, THIS WOULD ALLOW SOME CREDIT FOR ACTUAL LAND OWNERSHIP OF THIS WETLAND BODY AND REDUCE THE CONCERNS OF "TAKINGS".

THE RULE DESIGNATION OF SA WATERS AND WHERE IT STARTS AND STOPS IS OFTEN A COMPLICATED ISSUE. PHASE II RULES ATTEMPTED TO ADDRESS THIS BY ADDING SR WATERS. THE SR WATER DETERMINATION IS A CUMBERSOME WATER SAMPLE TIMING AND COLLECTION NIGHTMARE AND IT IS MY UNDERSTANDING THAT DWQ STAFF ARE ALSO TROUBLED WITH THIS PROCESS. I WOULD SUGGEST THAT THE SA WATER HIGHEST TERMINUS BE LOCATED AT THE NORMAL HIGH WATER LINE OF THE WATER BODY AND THAT THE ½ MILE RADIUS BE DETERMINED FROM THAT LOCALE. THE NORMAL HIGH WATER IS TYPICALLY AN EASY LOCATION FOR STAFF AND CONSULTANTS TO AGREE ON. WITH THAT IT MIND, **I WOULD SUGGEST THAT LANGUAGE IN .1005(b)(2), .1005(c) INDICATE THAT THE SA WATER LIMIT IS TAKEN FROM THE NORMAL HIGH WATER LINE AND THAT ANY REFERENCE TO UNNAMED FRESHWATER TRIBUTARY BE REMOVED.** (Note: The term mean high water has historically been used but the term utilized by Coastal Management is now "normal high water". The mean

high water could actually be waterward of high tide.)

DURING THE ENTIRE RULE MAKING PROCESS, THE ISSUES OF INCREASED WATER QUALITY DEGRADATION HAS FOCUSED PRIMARILY ON LOW-DENSITY PROJECTS AND THE THRESHOLDS THAT THEY WERE AT, WHETHER IT WAS THE 25% OR 30% THRESHOLD, WAS TOO MUCH. THE ENGINEERED SYSTEMS HAVE REPORTEDLY NOT EXHIBITED THE TYPES OR QUANTITIES OF DEGRADATION AND HAVE NOT BEEN THE PRIMARY FOCUS OF THIS REVISION PROCESS. HOWEVER, THE PROPOSED RULES ARE REQUESTING POTENTIAL SIGNIFICANT INCREASES IN THE AMOUNT OF WATER BEING CONTROLLED AND TREATED IF THE RUNOFF DRAINS TO SA WATERS AND THAT SIGNIFICANT INCREASE CAUSES GREAT CONCERNS ON OTHER ISSUES. THESE ISSUES INCLUDE THE POSSIBLE SIDE EFFECTS TO ON-SITE WASTEWATER SYSTEMS, THE ADDITIONAL SATURATION IN THE LOCALIZED GROUND WATER TABLE AND SO ON. IF WE WOULD ASSUME THE 1 YR 24 HR STORM FOR CARTERET COUNTY BEING A 3.8 " RAIN EVENT THE FOLLOWING WOULD BE THE AMOUNT CONTROLLED AND TREATED FOR VARIOUS PERCENTAGES OF IMPERVIOUS.

UNDEVELOPED- 0 % IMPERVIOUS (PRE-DEVELOPMENT)
Rv= 0.05 + 0.9 (% IMPERVIOUS)= 0.05 + 0 = 0.05
AMOUNT OF PRE-DEVELOPMENT RUNOFF= 3.8" x 0.05 = 0.19 "

DEVELOPED @ 25% IMPERVIOUS
Rv= 0.05 + 0.9(25%)= 0.05 +.225 = 0.275
AMOUNT OF POST DEVELOPMENT RUNOFF= .275 X 3.8=1.05"
DIFFERENCE BETWEEN PRE AND POST= 1.05 – 0.19 = 0.86" HOWEVER THE 1 ½" WOULD CONTROL

DEVELOPED @ 50% IMPERVIOUS
Rv=0.05 + 0.9(50%)= 0.05 + .45 = 0.5
AMOUNT OF POST DEVELOPMENT RUNOFF= 0.5 X 3.8" = 1.9 "
DIFFERENCE BETWEEN PRE AND POST= 1.9 – 0.19 = 1.71 "

DEVELOPED @ 75% IMPERVIOUS
Rv= 0.05 + 0.9(75%)=0.05 + 0.675 = 0.725
AMOUNT OF POST DEVELOPMENT RUNOFF= 0.725 X 3.8" = 2.76 "
DIFFERENCE BETWEEN PRE AND POST= 2.76" – 0.19" = 2.57"

A SIMPLIFIED OPTION COULD BE TO CONTROL AND TREAT THE 1 ½" RAIN EVENT FOR IMPERVIOUS SURFACES UPTO 50% IMPERVIOUS AND TO CONTROL AND TREAT A 2" RAIN EVENT FOR IMPERVIOUS SURFACES OVER 50%.

BUFFERS ARE BEING REQUESTED THROUGHOUT THE PROPOSED RULES FOR LOW-DENSITY AND HIGH-DENSITY PROJECTS. THE CURRENT CAMA BUFFER IS 30'. THE PROPOSED RULES IDENTIFY A 50' BUFFER FOR NEW DEVELOPMENT AN A 30' BUFFER FOR REDEVELOPMENT. THERE IS NO NEED FOR A 50' BUFFER FOR HIGH DENSITY DEVELOPMENT BECAUSE THE RUNOFF HAS TO BE COLLECTED AND TREATED PRIOR TO RELEASE. I WOULD ASK THAT THE 50' BUFFER FOR NEW DEVELOPMENT IN A HIGH DENSITY PROJECT BE DELETED.

THE 50' BUFFER FOR LOW-DENSITY MAY BE MORE SUBJECTIVE, BUT THE POTENTIAL IMPACT FOR THE NEW LOW-DENSITY THRESHOLDS SHOULD NEGATE ADVERSE WATER QUALITY ISSUES, THE 12% OR 24% LIMITS SHOULD BE SUFFICIENT.

.1005(b)(2)(C) IS A DIFFICULT PARAGRAPH TO UNDERSTAND. STAFF HAS INDICATED THAT A REWRITE OF THIS SECTION WAS WARRANTED. LOW DENSITY PROJECTS SHOULD BE EXCLUDED FROM THIS PARAGRAPH IN ITS ENTIRETY. BY THE NATURE OF

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THE LOW-DENSITY PROGRAM AN ENGINEERED BMP FOR COLLECTION AND CONTROL IS NOT ALLOWED AND THEREFORE THE CONTROL MECHANISM IS NOT AVAILABLE. LOW-DENSITY PROJECTS "SHALL NOT INCLUDE A DISCRETE STORMWATER COLLECTION SYSTEM".

FOR HIGH DENSITY PROJECTS .1005(b)(2)(C) ACCORDING TO MY DISCUSSION WITH STAFF, THE INTENT OF THIS PARAGRAPH IS NOT TO NECESSARILY REQUIRE INFILTRATION OF THE 1 YR 24 HOUR STORM ESPECIALLY CONSIDERING THAT THE STORM EVENT HAS ALREADY RECEIVED TREATMENT FROM ANOTHER APPROVED BMP SUCH AS A WET POND THAT IS RELEASING AND CONTROLLING THE RUNOFF. ANY DEVELOPMENT ON A TRACT OF LAND WILL INCREASE THE AMOUNT OF RUNOFF, THE ONLY ASPECT THAT CAN BE CONTROLLED IS THE RATE OF RUNOFF FROM ENGINEERED BMP'S. THE LANGUAGE ABOUT AN INCREASE IN THE AMOUNT OF RUNOFF SHOULD BE DELETED. I WOULD OFFER THAT THE APPROPRIATE LANGUAGE MAY BE MORE IN LINE WITH THE FOLLOWING:

(C) IN ADDITION TO THE OTHER MEASURES REQUIRED IN THIS RULE, ALL DEVELOPMENT ACTIVITIES ASSOCIATED WITH HIGH DENSITY PROJECTS SHALL PROHIBIT NEW POINTS OF STORMWATER DISCHARGE TO SA WATERS OR EXPANSION (INCREASE IN THE RATE OF DISCHARGE) OF EXISTING STORMWATER CONVEYANCE SYSTEMS THAT DRAIN TO SA WATERS. ANY MODIFICATION OR REDESIGN OF A STORMWATER CONVEYANCE SYSTEM WITHIN THE CONTRIBUTING DRAINAGE BASIN MUST NOT INCREASE THE RATE OF STORMWATER DISCHARGE THROUGH EXISTING OUTLETS TO SA WATERS. DIFFUSED FLOW RELEASED AT THE PRE-DEVELOPMENT RATE IN A NON-EROSIVE MANNER FOR THE VOLUME OF WATER REQUIRED TO BE CONTROLLED AND TREATED IN (B)(II) ABOVE SHALL NOT BE CONSIDERED A DIRECT POINT OF STORMWATER DISCHARGE.

LASTLY, THE OPPORTUNITY EXISTS TO CLEAR UP THE "POCKET OF HIGH DENSITY" ISSUE THAT CREATES MAJOR CONCERNS FOR APPLICANTS AND DWQ STAFF. I WOULD SUGGEST THAT FOR A 12% IMPERVIOUS COVERAGE LIMIT THERE NEVER SHOULD BE A QUESTION OF A POCKET OF HIGH DENSITY. IF THE ENTIRE 12% OF DEVELOPMENT IS IN ONE PLACE THE REMAINING 88% HAS NO IMPERVIOUS COVERAGE AND HENCE NO TECHNICAL SOURCE OF POLLUTION. THE SAME LOGIC SHOULD APPLY FOR SITES WITH THE 24% LIMIT IN AS MUCH THAT 76% IS UNDEVELOPED. THIS APPLIES TO MANY POTENTIAL PROJECTS BUT A GOOD EXAMPLE WOULD BE A SCHOOL SITE. OBVIOUSLY THE SCHOOL COMPONENTS NEED TO BE IN ONE CENTRALIZED AREA AND IF THE SITE IS SUFFICIENT TO MEET EITHER THE 12% OR 24% COVERAGE LIMIT NO ADDITIONAL BMP SHOULD BE REQUIRED.

I APPECIATE THE OPPORTUNITY TO PARTICIPATE IN THIS RULE REVIEW PROCESS AND HOPE THAT THE FINAL VERSION SUBMITTED TO THE LEGISLATURE WILL ADDRESS THE ISSUES DISCUSSED ABOVE.

Ronald D. Cullipher, P.E.
Stroud Engineering, P.A.
151 A Hwy 24
Morehead City, NC 28557
ph 252-247-7479
fax 252-247-4098
email: rcullipher@stroudengineer.com