**Minimum Design Criteria (MDC) Team  
04/28/2014  
Triangle J COG, Durham**

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| **Attendees** | | | | | |  |
| ***Team Members*** | |  | | |  | ***Others*** |  |
| Eban Bean  Bradley Bennett  Jonathan Bivens Tim Clinkscales Tracy Davis Boyd Devane Hunter Freeman Mike Gallant Joe Hinton  Marc Houle Ron Horvath Bill Hunt  Brian Lipscomb |  | | Annette Lucas  Mike MacIntyre Todd Miller  Cameron Moore Tom Murray Robert Patterson Derek Pielech Peter Raabe JD Solomon Virginia Spillman Toby Vinson Rob Weintraub |  | | Mark Senior, City of Raleigh  Julie Ventaloro, NC DEMLR  Mike Randall, NC DEMLR Ryan Eaves, Durham County  Larry Ragland, McNeely Associates PA Jeanette Powell, NC State |

**What is an “MDC”?**Hunter – Reviewed draft definition of Minimum Design Criteria (MDC) as presented in handout. Base pollutant is TSS. Supplemental pollutants are nutrients (N,P), bacteria, and temperature.  
Mike G -- Reservations about asking permittee to meet the “low” bacteria removal standard if it’s not in the administrative code. Don’t want to muddy the waters.  
Bradley B – Nutrients are the only pollutants in the rule that have specific loading number.  
Annette – No rule that lays out specific temperature standards.  
Todd – Not so much removing concentrations of bacteria; trying to infiltrate the water; not concerned about sufficiency of BMP to remove bacteria out of stormwater. Uncomfortable with the wording. We have a design standard – the design storm.  
Annette – SA waters have requirements for no discharge. For some, relatively easy retrofits for temperature controls -- trout streams, for example.  
Bill – Can think of examples with lined bioretention that is still good for pathogens, but not for infiltration.  
Annette – Intent is that our Manual has both requirements and recommendations. Smalll retrofits that make it better for bacteria or temp would be recommendations. Might need to re-work it to emphasize when something is requirement vs. recommendation.  
Hunter – Are bacteria standards in the rules?  
Bradley – We’re required to look at management controls that protect water quality. In Phase 2 rules, Coastal rules, says best BMP to use for pollutant removal. We need to emphasize/highlight this.   
JD – Can we strike note for temperature (high, medium, low) and add “supplemental voluntary design recommendations” for temperature control?  
Tim – Be conscious that we don’t want to hold up timeframe for permitting for these recommended things. These are the things that are holding up permits.   
Mike G. – What’s “high, medium, low” for bacteria?  
Annette – Qualitative judgment call based on research.  
JD – We are not trying to make policy; we are working on making a problem statement.  
Hunter – The code says “water quality standards,” so when temp and bacteria are applicable to water quality standards, it might not be completely voluntary. Also don’t like high, medium, or low as far as how the BMP chapters are set up. Would prefer recommendations for improving temperature bacteria control, and not rank it.  
Annette – I like that.  
Rob – My question is getting back to mission of our group. We have 3 supplemental design standards. How will we get through all these BMPs if we spend so much time talking about supplemental design standards? Can we separate these from the mission?   
Peter – Agree. Issue is some of the stormwater laws bring these criteria into effect. So only dealing with stormwater with 85% TSS and first flush, this is fine, but trout streams you have to control for temperature. So we need to have something that addresses temperature. How do we limit this so we can achieve the goal of the law while sinking our teeth into it?  
Larry Ragland - Water temperature issue is more linked to the receiving watercourse. What is the temperature coming off the BMP in comparison to its receiving stream?  
Todd – I misunderstood what these supplemental things were. Thought they were required, not voluntary. Nutrient one is actually required. We do have requirements for bacteria. Supplemental design standards are there to achieve design storm requirements. And state what is actually the requirement. Under bacteria, cite that there is a design storm standard that must be met.   
Tim – The statement in the handout “MDC” definition takes care of all three of the supplemental criteria if they’re required.  
Hunter – That was the intent.  
Annette – I think what Todd is saying is the larger design storm is our means for addressing bacteria. There may be simple retrofits that can be done to a device that could improve bacteria removal rate as a voluntary recommendation. It would be above minimum design. When designers see our chapter, they’ll see list of things that are required and a list of things that are recommended.  
Eban – The requirement is our first priority, so replace word “standards” with “requirements.”  
JD – Prefer word “standards.”  
Mike G. – There are no other areas where bacteria is an issue, right? Just shellfishing waters?  
Jonathan – Is the word “perpetuity” a standard word? Nobody designs or builds anything for perpetuity. Needs to be designed to a certain standard and then maintained.   
Hunter – That term starts in the code. Intent is that there are design elements that with proper maintenance ensure that the device could work in perpetuity.  
Jonathan – Most design standards don’t have a maintenance component.  
JD – Talking about constructability vs. function. Function is what we want in perpetuity.  
Jonathan – We’re talking about a device and design standard – neither of those will be in perpetuity. The device will degrade over time.  
Todd – Are we talking about devices or treatment systems?  
Annette – The majority of developments are treated by one device.  
Jonathan – We have to build to meet it and maintain it so it continues to meet it.  
Annette – Our rules require us to capture maintenance issues in addition to design.  
Jonathan – Just don’t want us to get caught up in a platinum standard. There are tradeoffs in everything you do. Don’t want to imply a level here that it will become too expensive.  
Ron H – There is a maintenance cost to keep the functionality of the system. Don’t have a problem with wording as long as associated with function instead of device itself.  
Hunter – Use word “system” instead of “device” in MDC definition.  
Annette – “System” means device as well as maintenance.  
Bill – After “in perpetuity,” add “to protect water quality standards.”  
Annette – What does Team think of Tim’s additions to MDC definition? Our stormwater rule is from 1995. Devices have become common that weren’t even used then. I suggest we do use for now the antidegradation rules. If you don’t design a bioretention cell media properly, there may be degradation. We can later talk about updating 2H .1008. Correlation may not be word for word for devices like permeable pavement, bioretention. . . . 2H .1008 rules, which set up design standards, require that overflow from infiltration system go to a level spreader and filter strip.  
Bill – The level spreader and filter trip stop working after a big storm.  
Annette – So we can update that as well in 2H rule later. We do not necessarily have to base all our MDC work on current code. The session law doesn’t require us to be limited “solely” by current code/statute.  
Tim – I’ve been burned too many times, so would prefer to keep word “solely.”  
Peter – Some of our current rules have designs that don’t work, so if we restrict our work to “solely” current code, we will conflict with current science.  
JD – The problem is the 1995 rule update. We’ll see things in the positive and negative that we’ll want to change in that rule. I don’t think our mission should get too far off what it is supposed to be.   
Annette – For now, if we think a design measure is needed to protect water quality, we should go ahead and adopt that in our MDC process.   
Mike G. – If antidegradation is part of our code, I don’t see an issue with that. There is an equal or better policy with state stormwater policy. So in case of level spreader, we can say that it is not equal or better – that’s a sort of escape hatch.  
Annette – Example: Infiltration needs 0.52 infiltration rate; we’d like to see lower rates for certain soils.  
Tim – What changes at regulatory level? How does a permit get approved quicker and take less red tape to happen?  
Annette – We would clearly state what are design minimums and what are recommendations. Direct permit writers that if project meets all minimums, then approve the permit.  
Tim – Why does only the government side get to say when something’s better?  
Annette – That’s why we’re trying to boil it down to MDCs.  
JD – This team needs to get through each of these devices and address gaps, where we can do better. For sake of time, we need to use existing rules.  
Annette – We’ve rewritten definition of MDC. Are we comfortable with it now?  
*Team is in agreement.*  
Annette – What about the nutrient, bacteria, and temp design criteria? They won’t be high, medium, low anymore. Instead, we’ll say if you want to optimize device for bacteria, do this. . . . Are we in agreement?  
*Team is in agreement.*  
Peter – Are these definitions primarily for our own use? Not going into a regulatory document, right?  
Annette – Correct. These are to help inform our Team’s process.  
  
**Discussion on Scorecard**  
Hunter – Our approach is to use a scorecard format. First one is tailored for all BMPs in general. Let’s go through them and compare each one to the definition of MDC. Take each description – Is this a requirement for MDC? If it is, don’t need to discuss supplemental ones. If not, go on to discuss supplemental design requirements. We’ll eventually do this for every BMP. These first 12 apply to every BMP in the book.   
Annette – The first 7 items are direct quotes from the Rules. Envision a single chapter that applies to all devices.   
 **Item #1**: This is straight out of the Rule.   
Ron – What’s off-site drainage in the future? That’s always been my problem with this.  
Hunter – “take into account” doesn’t necessarily mean treat it.  
Virginia – You can either treat or bypass off-site drainage.  
Jonathan – That is not what this statement says.  
Bradley – if you’re bypassing it, it is not draining to the system.  
Annette – This statement is intended to avoid undersizing a device.  
Tim – It is not the problem of the property owner to worry about runoff from other people’s property.  
Ron – I’m okay with the language, but some might interpret that you can’t bypass it.  
Bradley – If you have a treatment system, you have to make sure the system functions. Must account for all drainage it’s receiving. You can bypass flow around the system if the flow is not from your site.  
Hunter – You have to design for all stormwater going to the system. But you can bypass off-site drainage.  
Jonathan – You have to treat everything that’s going to your system.  
JD – Where is the ability to bypass written in regulation?  
Annette – It’s not in the regulation.  
JD – Then let’s get it into the regulation.  
Bill – Add “any off-site drainage may be accepted.”  
Mike G. – I’ve been told from towns that they would like you to treat off-site water.  
Hunter – I’ve never had the State tell me I need to treat off-site water.  
Mike G. – I did have DOT tell me that once.  
  
**Item #2**  
Ron – When you have a recorded drainage easement, should we also have “plats”?  
Annette – Since this is a direct quote from the rule, maybe add another sentence?  
Hunter – This is up to local discretion.  
Rob W – Can we add something for private streets? All this maintenance is for the benefit of the HOA which owns private streets. HOA can’t record all their streets/alleys as public.  
Derek P – Private road is your recorded access easement to the public right of way. So private roads allow you access to the access easement. You are required to provide access to an easement even if it’s through a private road.  
Jonathan – The second sentence cleans it up.   
Virginia – Part of the reason for this language is for the inspectors of the device.  
Robert P. – The ordinance should give you right of access.  
Mark Senior – Need to give notice to get access to private property.   
Jonathan – Need to give notice for access to high-security properties. We can’t cover that sort of thing with this language.  
Brian L- Are we allowed to make these changes -- are these suggestions for the legislature?  
Annette – The ones currently in the code -- these will be suggestions for clarifications.  
Mark senior – Low Impact Development – Won’t be recording easements for every rain garden, cistern, etc.   
Rob W – Add “alternative agreements may be acceptable.”  
  
**Item #3**  
Annette – One issue we have is developments built in phases.  
Rob W – Implicit that the stormwater control measure be returned to its intended state.   
Hunter – The rule doesn’t assign a timeframe to when the BMP must be returned to its designed state.  
Jeannette - Suggest adding language used for “or impacted by”. . . .  
JD – HOA will get hung with this item, not the developer.  
  
**Item #4**  
Hunter – Say all side slopes should be stable; don’t specify 3:1.   
Bill – Do we agree that if it’s stabilized with vegetation, it shouldn’t be greater than 3:1?  
Hunter – Agree. Interpretation has been that must have 3:1 side slopes, even when there are retaining walls.  
Jonathan – Don’t think 3:1 is always right. Not because the soil type; it’s because the wrong vegetation was used. Needs other caveat – for permanent matting, etc.  
Bill – Think that Dr. Malcolm thought that 3:1 was the bare minimum you need to have for maintenance.  
Hunter – MDC should say that “side slopes shall be stable and maintainable.” Up to engineer to decide how to get to that. MDC should be broader – shouldn’t specify vegetation must be used.  
Annette – Permit writers will find it hard to communicate to regulated community how they interpret “stable and maintainable.”  
Virginia – When we deal with HOAs, they want to try to get out of the maintenance. If slopes are 2:1, they aren’t going to want to do maintenance. 2:1 below normal pool and 3:1 where there’s vegetation. It helps a little bit.  
Annette – We allow that now.  
Rob W – 90% of basins are behind houses, they’re all hand cut. Making them 3:1 require 50% more maintenance; easier and quicker to do them smaller. If they can be smaller/steeper and stable, get a better product. People aren’t using power mowers.  
Annette – Like having the 3:1. Likelihood of stable vegetative cover is greater than if 2:1.  
Hunter – Is that an MDC or is that a design recommendation?  
Annette – We should clarify hardened slopes that are steeper are acceptable; but if doing vegetated slope, I think there’s wisdom in 3:1.  
Ron – I’m okay if we do a vegetated 3:1 and steeper with mechanically-stabilized slope.  
Bill H – Just want to make sure MDCs will work. Don’t want to allow 1.5:1 slopes if it won’t work.  
Tim – Why wouldn’t the design community be allowed to say that 2:1 slope can be stabilized?  
Hunter – I don’t think we need to look at cost of maintenance as part of MDC.  
JD – Reiterate that we need to do our work based on what rules are today.  
Hunter - My take is as we go through these, wording is okay for now, but we collect recommended language.  
Annette – Show of hands to allow steeper than 3:1 vegetated slopes: 4 hands; how many people want language to be changed to allow vegetated slopes to be steeper than 3:1: 3 hands; how many 3:1 for vegetated slopes, but hardened structures can have steeper slope? Most hands raised.  
Peter – Reiterate that these MDCs are minimum criteria.  
Mike G – Could we allow variances for those projects that don’t meet the minimum design?  
JD – Or would you be approving something that is equivalent, but doesn’t meet the minimum design?  
  
**Item #5**  
Hunter – Does the O&M plan need to be signed and notarized?  
Tim – Should be added to rule if you’re going to require it.  
Robert P – Worthless if not notarized.  
  
**Item #6**  
Hunter – In third line, don’t need words “for the type of.” Last sentence, requirements of this “permit” instead of “Section.”  
Rob W – Is this necessary for a BMP? Not all types of development are “occupied.”  
Annette – Propose having a small workgroup to work on issues of phased development. Let her know if you’re interested.  
Todd – That work group should also consider if we should be requiring as-built designs.  
  
**Item #7**  
Hunter – Omit this all together – is covered in sediment and erosion control permit.  
*Team agreed.*  
  
**Item #8**  
Annette – This item is recommended by me. Some version of this is in most of our BMP chapters. Is important for antidegradation that we don’t harm the receiving waters.  
Jonathan – Don’t think “receiving water” should be in this. There could be impact to receiving water if device is bypassed by a larger storm.  
Bill – The way we design a lot of facilities now, we do damage the banks of receiving streams. Just the nature of how you mitigate the 2-year storm with a device, expose banks to these flows for longer periods of time. I think that’s a place we want to go, to adjust our outlet structures. If we keep “receiving waters,” we’ll be in violation any time we build a pond.  
JD – I think this whole thing should be struck. Up to designer. Might want to put it in the rule.  
Annette – Is Item 8 required to protect devices to meet MDC in perpetuity and to protect water quality standards? I think it is.  
Bradley – Similar language exists in the rule for infiltration systems.  
Mark Senior – What storm do you design the bypass for? You leave it wide open. Where do you draw the line? Would be okay with putting 10-year storm in as bypass threshold.  
Tim – What does “safely” mean?  
Mark Senior, Jonathan – Get rid of word “safely. Doesn’t add anything.  
Annette – Could this item be an MDC? Or is it just a recommendation?  
JD – Until there is science saying what size storm it is, don’t use it as criteria. Strike it.  
Annette – Now, the BMP Manual describes that device must safely bypass.  
Bill –In actuality, 10-year is probably the minimum.  
Hunter – Overlap with engineer standard of care practices; our reliability is reduced if we don’t design something that can withstand a certain storm.  
Virginia – I feel like this is something regulators like to see engineers do. Some engineers are not doing this.   
JD – Take this item out - more research is needed.  
Jonathan – I’m okay with keeping it in as is, but not assigning a specific size storm. Okay to remind people to look at this. Our standard should be avoiding damage to the device.  
Peter – Change “device” to “system.”  
Hunter – Have a problem with the term “bypass.” Use “pass” instead. Don’t say 10-year storm at all – could conflict with other design requirements in other parts of the rules.  
Annette – Is #8 required to maintain function in perpetuity, protect water quality standards and remove TSS?  
Team – Yes.  
Annette – We said earlier devices to protect devices in perpetuity should be necessary, not just recommended.  
Ron H – The engineers in this room have ethics; there are some out there that are idiots. I’ve come behind too many of them that did the bare minimum to get it permitted and didn’t consider the structure overtopping. I think we need to be able to pass the storm, and we should require it.  
Tim – So you’re saying that all the regulators are pure in their motives? That’s why we have Boards so that people can lose their license. Where does the government go to lose their license?  
JD – I don’t think the average engineer needs to be reminded of antideg. I think you build the reg to the average.  
Ron H – I think it’s reasonable to require the average engineer to consider larger storm events be passed.  
Todd - If we don’t set a specific size storm for bypass, we need to go back and provide more clarity in the maintenance report.  
Bradley – We haven’t started getting into how these MDCs will be implemented. We need to develop a process for processing applications and for ensuring compliance with MDCs. We should think about that part now or else we may have to go back to this topic later.  
Tim – Session law says we can only do exactly what is stated in statute.  
Annette – That is not what session law (H74) says. We will develop MDCs that we think are needed to protect wq standards. We will have recommendations for changes to law.  
Rob W – Couldn’t we just leave something in here so when we go thru each device, we can consider it? I think every device I work with has a bypass. Good design recognizes a bypass. If we can’t even agree on that, we won’t agree on whether 10-year is better. Let’s talk about this issue as we go through each device.  
Annette – So do we 1) delete this item (zero votes); 2) keep as written with modification (zero votes); 3) consider bypasses as we go thru each device where applicable (unanimous)?  
  
**Item #9**  
Annette – Consensus is to strike it b/c it’s in other rules.  
  
**Item #10**  
Hunter – We should consider this on BMP by BMP basis.  
*Team agreed.*  
  
**Item #11**How many think it’s covered by Item#6 (most hands raised)? One vote that it should remain as separate item.  
  
**Item #12**  
Rob W – Isn’t this already covered by concept of perpetuity in MDC definition?  
Bill – I can’t imagine anyone not following what the manufacturer says for legal reasons. It’s so obvious, we don’t need to say it.  
*Team agreed.*  
Hunter – This should be in MDC for proprietary systems, but not all BMPs.

**Action Items**Annette – Update the MDC definitions and scorecard documents in accordance with Team consensus  
Annette - Send info to Team on TRW relating to wet ponds  
Annette –Send Team additional homework within 2 weeks

Team – Review BMP Manual chapter on wet ponds and do additional homework as assigned  
Team – Contact Annette if you want to volunteer for smaller working group on phased developments.

**Next Meeting – May 19, 2014 – Wet Detention Ponds**