CITY OF RALEIGH
STORMWATER MANAGEMENT ADVISORY COMMITTEE (SMAC)

Raleigh Municipal Building ·222 W Hargett St · Room 305
3:00pm · Thursday, May 1, 2014

Committee Members Present: Michael Birch, David Webb, Francine Durso, Matthew Starr, Marc Horstman, Chris Bostic

Stormwater Staff Present: Mark Senior, Sonya Debnam, Suzette Mitchell, Scott Bryant, Ben Brown, Lauren Witherspoon, Sheila Thomas-Ambat, Veronica Barrett, Ron Davis, Brad Stuart, Kevin Boyer

Members Absent: Will Service, Vanessa Fleischmann, JoAnn Burkholder, Kevin Yates

Guests: Emily Darr, Emily Meineke, Mike Ruck, Wally Shepherd, Beth Ellissa, Amy Crowley, Matthew Hornack

The following items were discussed with action taken as shown. Mr. Birch called the meeting to order at 3:02 p.m.

Mr. Birch welcomed everyone to the meeting. Mr. Birched advised that four members requested absences and called for a motion to allow the excused absences.

Item 1 – Commission/Stormwater Staff Update on Matters of Importance to the Stormwater Management Advisory Commission

1.1 Mark Senior -

- **April meeting minutes** – *Mr. Webb made a motion to approve minutes. Mr. Horstman seconded, the motion was approved unanimously.*
- **Water Quality Cost Share modification** – Attorney reviewed comments. Will forward on to council or get on a schedule to go to council for amendment.
- **LID Study**
  - Consultant (Tetra Tech) – Putting together work plan. We have a draft to bring back to staff and will forward to stakeholders group for additional comments and then back to SMAC.
  - LID Performance Standard – Working on water supply as a result of life time fitness.
  - City Manager – Requesting overview of LID program
    - *What other communities are doing*
    - *What's working and not working*
    - *What LID actually looks like when you try to implement it in a municipal situation*

      (Those performance standards, we'll bring that to the city council at a work session – I want to say on, July 17th. Our game plan is to do that, get feedback from the council before making any other changes and bring that back to the stakeholder group and this body for additional comment.)

Item 2 – Development Exemptions

2.1 **Mark Senior**: Provided a brief PowerPoint presentation on development exemptions.

2.2 **Ms. Durso**: Indicated she would support using the NRCS numbers. The alternative numbers Michael Birch presented don't have any scientific background basis behind them. On our first go around on this, I would rather propose something that has been used in the past for many years and has some scientific basis and rational behind it.

2.3 **Mr. Bostic**: We talked about at one point, provisions for expansion of existing houses and I don't know that the way that it's presented right now that we have an allocation. I think it might be worth some discussion as far as if we do allow an expansion, what that square footage number will be.

2.3.1 **Ms. Durso:** So would these apply only to new construction?

2.3.2 **Mr. Birch**: My understanding is when people come in for permitting whether it be on a full, tear down and new house, or even whatever triggers needing a building permit for an addition, this would be triggered.

2.3.3 **Mark Senior**: Anytime they add additional impervious surface, it potentially triggers a review. They can tear down and build up the same thing they have there and that would not trigger it.

2.3.4 **Ben Brown**: The existing would probably be "grandfathered", but the expansion would not.

2.3.5 **Mr. Birch**: On the "grandfathered" issue we would want to make sure it's clear in what we do that on the tear down that you can tear down and build back on the same amount of impervious. My sense is that hasn't been our intent to capture the scenario where you tear down and build in the same amount and you're not actually increasing impervious surface, that it's actually the increase of impervious surface. Our discussion over the last 18 months has been good. As of right now, lots within these exemptions, there is no limit on impervious surface and no analysis required as to what impacts are being created by that additional impervious surface. I think our focus of the last few months. has been on where we draw the line. Most of my attention has been focused on the R4 and the R6 districts, so namely the 38% and the 51%. My suggested thresholds were 50% for the 4 units for acre and 60% for the 6 units per acre. I think those were based in part off these numbers and also in recognition that we're changing something from no limit, to some limit. My sense of these numbers is that that's too drastic of a change. We always have the option to ratchet it further if it needs to be done.

2.3.6 **Mr. Starr**: How easy of a process would it be to ratchet up?

2.3.7 **Mr. Birch**: It would be another text change. Based on some of the re-development, particularly on the inside beltline lots, it was my sense that these thresholds, the 38% and the 51% would capture a lot of the re-development that has occurred, both the wholesale re-developments and the additions. We're shifting the burden in a large way to this new

expansion of impervious surface. If you can't support 38 to 51, I would suggest 50 & 60 for those two.

2.4 **Mark Senior**: Once this leaves SMAC, it's going to move forward as a proposed text change, where it will go back through Planning Commission, Council, opportunity for potential public input, and input from development communities to see if these numbers work for them or not.

2.5 **Ms. Durso:** Made a motion that we go with these impervious limits, which are based on the TR 55 and we will include an additional statement that will allow up to 400 square feet of an addition to be put on an existing unit without triggering the ordinance. I want to clarify if there are 4 units per acre are we saying 400 feet on each unit?

2.5.1 **Mr. Birch:** I think that ratio is a reference to the lot size, so in the R4 district you're looking at a single family house on a quarter acre lot, not multiple. Each lot zoned R4 would have that.

2.5.2 **Ms**. **Durso:** Ok. That's my motion.

2.5.3 **Mr. Birch:** Does that include the grandfather clarification as well?

2.5.4 **Francine Durso:** Yes, if they are rebuilding to the same impervious square footage.

2.5.5 **Mr. Senior:** That's associated exempt. It's existing in the code, we can just clarify that for people's benefit.

2.5.6 **Mr. Webb** seconded the motion

2.5.7 **Mr. Bostic:** I just want to clarify that the vote that I have in mind, my vote will be more about the limits.

2.5.8 **Matthew Starr**: That will go for mine as well.

2.5.9 **Michael Birch:** The motion was passed 4 yeato 2 (Bostic/Birch)

<u>Item 3 – Water Quality Cost Share (562 New Bern Ave. Cistern)</u>

3.1 **Brad Stuart**: There is one petition for the Stormwater Quality Cost Share today.

- **<u>Project 1</u>** 562 New Bern Ave
  City Share $ 9,057.75
  Owner's Share <u>$ 3,019.25</u>
  Total Cost $12,077.00
  - 1,200 Gallon underground cistern capturing runoff from approximately 1,800 square feet roof surface
  - Water will be used for flushing toilets, laundry, and irrigation of the lawn
  - Maintenance term is 10 years.

3.2 **Ms. Durso**: For a cistern, what's the maintenance agreement like?

3.2.1 **Brad Stuart:** We have a standard yearly maintenance regime they're supposed to do, monthly checks and yearly checks for the maintenance. They're signing the actual agreement that covers the reimbursement and the agreement to do that maintenance. We're tacking on that kind of maintenance, terms and condition for what they need to do for an underground cistern. This particular design they're using or plan to use is a vortex filter that eliminates much of the debris that would get down in the cistern, so it will be keeping the water very clean. It's going to be used for the toilets and laundry, so they are pretty much going to be in a situation where they are going to have to maintain it.

3.3 **Mr. Horstman:** Is this system also set up to the city water as well? What will happen if you run out of water in the cistern?

3.3.1 **Brad Stuart:** It would have a makeup supply.

3.4 **Emily Meineke** *(Petitioner)***:** We have thought about what would happen if for example we had a drought. There's a floater that sits in the tank and the tank fills up with city water to a certain levels if it gets too low. There should be a solution for that.

3.5 **Mr. Horstman:** What happens if we get too much rain and the system pressurizes?

3.5.1 **Mr. Ruck** *(Rainwater Solutions Contractor):* Basically the way this is setup, once the tank's full, the rainwater will bypass the system completely. If we have a rainy year, we just have to deal with that water. The system is not maintenance free, but we design it and get the homeowners engaged to make it very easy to maintain the system. The vortex filter is a high dollar filter. It's a great filter, it's easy to clean and easy to maintain. They are agreeing to maintain their own water system. They will have a makeup water supply, which basically is a float valve that once the tank reaches a certain threshold, it adds in just enough water to flush the toilet. We'll actually set it for 50 gallons or whatever it takes to run one load of wash. Then it tops backup, leaving room for the next rain event. Based on their water budget and 1,800 square feet, they'll need a 1,200 gallon tank. They should never, even in the driest summer probably drop below 25% in that tank. It's hyper-efficient. If they forget to maintain their filter, the water bypasses and they're going to realize and recognize it in their city water bill.

3.6 **Brad Stuart**: One thing I might add, its new construction and they are trying to put in components that are environmentally friendly.

3.7 **Mark Senior**: Right now, the Public Utilities Department does not have a fee schedule for discharging unmetered water to their sanitary sewer system where it's treated. This was addressed by Council many years ago. The understanding was that Public Utilities would ultimately study that issue, assuming that more and more people are going to be looking for using rainwater and harvested water for flushing toilets and other non-portable uses. They haven't done that yet. They're requiring commercial operators to meter their rainwater that goes thru the sanitary sewer and bill them for it but, they do not intend for the time being to bill residential customer for that, the system is not in place and it's expensive to meter the water. They do not want to put that burden on the residents. It's likely that somewhere down the road Public Utilities Department is going to come forward with a number, some sort of a system for figuring out what would be an appropriate billing for people using stormwater or rainwater for flushing and so on. It might be a flat monthly fee or it might be based on the number of toilets. We just want to make sure the petitioner knows that may be coming down the road. The other thing I wanted to comment on is the make-up water, Public Utilities, the Inspections plumbing section and inspections are very aware of the issue. Public Utilities is very nervous about these kinds of systems contaminating the portable water sources, so they've got special valves and air gaps. It's a fairly rigorous inspection process for installing these systems when they're going to be used for toilet flushing and other operations like that.

3.8 **Ms. Durso:** Are there plumbing code issues?

3.8.1 **Mark Senior:** There are specific codes that they will have to meet for makeup or in a stormwater cistern system, but Inspections and Public Utilities is aware of it, so they'll be taken care off. That's one of the reasons why the cost on this one is higher than some of the other projects. The cistern I have is stand alone. It's not connected to the house and only used for washing cars and irrigation, so it's a lot cheaper than meeting those codes and there's no inspection. This one is and it's got to have more filtering to be used internally in the house so it's a more expensive operation. It should get a lot more use than my cistern does. I have to forcefully drain mine down in the winter because there is no car washing or irrigation going on in the winter or very little.

3.9 **Mr. Bostic** made a motion to approve the project.

3.9.1 **Mr. Webb & Mr. Birch** seconded, the motion was approved unanimously.

Item 4 – Drainage Assistance Petitions Review (8 petitions)

4.1 There are eight (8) Drainage Petition Requests up for review this cycle.
Six petitions with severe erosion and two with structural flooding with a remaining budget of $238,000 *(PowerPoint presentation provided by Sheila Thomas-Ambat)*

- **Project 1** 122 St. Mary's Street
  City Share $21,500
  Owner's Share $ 3,000
  Total Cost $24,500

  Problem Summarized: Structural flooding – This is a 2.1 priority, located in the Pigeon House watershed and the drainage area is 0.8 acres.
  Proposed Solution: Install a trans-drain system and connect it to an existing 18 inch pipe that eventually connects to the street system.

- **Project 2** 4829 North Hills Drive
  City Share $146,000
  Owner's Share $ 5,000
  Total Cost $151,000

  Problem Summarized: Severe erosion – This is a 3.1 priority, located in the Mine Creek watershed and the drainage area is 6,405 acres.
  Proposed Solution: Stabilizing 65 LF of the stream bank. The least cost design solution could involve sloping and stabilizing the bank with a combination of rip rap along the toe of the creek and vegetation and turf reinforced matting along the upper bank. The design solution could include soil lifts and benching in areas or use of gabion baskets adjacent to pool house.

  Summary Questions and Answers for this project

  - Is there any way to restore that bank without tearing down those trees?

  (a) Sheila Thomas-Ambat: Possibly. We did a similar project like this recently, last summer. Where we thought we had to come in and do some major work, turned out that we could just use the existing trees and the existing root ball structure of the trees and the cost was significantly reduced from what we originally thought it would be. There is a very good possibility that we can take that approach. However, without actually going in and doing survey data, there is no way to tell right now. In terms of this estimate I was using the worst case scenario.

- **Project 3** 110 Glascock St
  City Share $17,300
  Owner's Share $ 4,300
  Total Cost $21,600

  Problem Summarized: Severe erosion – This is a 3.1 priority, located in the Pigeon House watershed and the drainage area is 10 acres.
  Proposed Solution: Remove and replace existing downstream drop inlet with junction box. Add an additional yard inlet at low point and replace approximately 15 LF of 18" RCP pipe.

- **Project 4** 6709 Spencer Court (2nd time presented)
  City Share $21,800
  Owner's Share $ 5,000
  Total Cost $26,800

  Problem Summarized: Severe erosion along both banks of a regulated stream - This is a 5.1 priority, located in the Mine Creek watershed and the drainage area is 190 acres.
  Proposed Solution: Grading 65 LF of the left and right bank to a 2.1 slope and armoring the toe with rip rap. Stabilizing the upper bank by creating a flood plain bench and/or using other bio-engineering methods.

- **Project 5** 500 Brent Road
  City Share $60,300
  Owner's Share $ 5,000
  Total Cost $65,300

  Problem Summarized: Severe Erosion along right bank of a regulated stream – This is a 5.1 priority, located in the Bushy watershed and the drainage area is 848 acres.
  Proposed Solution: Gabion baskets or soil lists for approximately 65 LF on the right bank. Transition upstream and downstream by grading 2H:1V and armoring the toe with rip-rap. Upper bank will be stabilized using bio-engineering.

- **Project 6** 3705 Shadybrook Dr.
  City Share $23,900
  Owner's Share $ 5,000
  Total Cost $28,900

  Problem Summarized: Severe Erosion – This is a 5.1 priority, located in the Crabtree watershed and the drainage area is 84 acres.
  Proposed Solution: Solution is based on in-situ pipe repair which will involve filling voids around pipe (backgrout) and sealing joints with polyurethane solution, installing a toe wall at the downstream pipe invert and stabilizing the slope above the pipe.

  Summary Questions and Answers for this project
  - Does cost estimate include removing the joint, re-bedding the pipe and doing a pump around.
    (a) Sheila Thomas-Ambat: It does not.

- **Project 7** 4125 Windsor Place
  City Share $27,300
  Owner's Share $ 5,000
  Total Cost $32,300

  Problem Summarized: Severe Erosion – This is a 5.1 priority, located in the Big Branch watershed and the drainage area is 70 acres.

Proposed Solution: Remove and replace 45 LF of 42" corrugated metal pipe with 48" RCP pipe. Stabilize approximately 10 LF of the inlet and outlet end of the pipe by grading to a 1.5:1 slope, installing rip-rap and vegetate upper banks with erosion control matting and vegetation.

- **Project 8** 309 Shaftsberry court

City Share	$20,500
Owner's Share	$ 3,600
Total Cost	$24,100

Problem Summarized: Structural flooding due to downstream location and flat topography – This is a 4.1 priority, located in the Big Branch watershed and the drainage area is 7 acres.
Proposed Solution: Install driveway trench drain system to capture and channel runoff to the rear of the property. Install a defined swale and re-grade rear of property for positive drainage.

4.2 **Ann Christian** *(Petitioner for 122 St. Mary's St)*: I bought the property in 1994. This is on the issue of fairness. (Indicates PowerPoint) To the left of the wall is what was once a residence in 1994 when I purchased the property, and behind it, which is now a parking lot, was a garden. It had all kinds of things that absorb water. They added on to the back of the building and the person who owned that building wanted them to have that area behind it as a parking lot, so they took out the garden. They purchased the house that faces Jones Street and took out the garden and placed a parking lot. This is when I started having a lot of rain problems. I went to considerable expense to put a trench drain in front of that door in the back of the property, window boxes to further deflect water, and to the left another drain at a low point and a large diagonal pipe in the ground. After the unfortunate decision to allow them to take out the garden, which I didn't have any idea was such a water problem, it's a little more than the City owns the alley. They approved the terrible water creation problem by allowing that garden to be taken out.

4.3 **Representative** *(Petitioner for 4829 North Hills Drive):* The currents come in and take the soil out. We had 350 families last year and we probably have about 700 to 800 kids that go there. It's 50 years old and the creek is definitely going to take the building out. This is the only bathhouse that we have. It supplies two showers, two toilets, and two sinks.

4.4 **Mr. Birch:** Makes a motion to recommend approval for funding for 122 St. Mary's Street, 4829 North Hills Drive, and 110 Glascock Street.

4.4.1 **David Webb** seconded, the motion was approved unanimously.

Item 5 – Pending Items

5.1 **Mark Senior** advises that staff is working on an annual report to go to Council. He is looking to have it prepared ahead of the next meeting for committee to look over. There is also the work plan. That will take a little more work to put together, but we'll probably put out an outline or draft of what's been down in the past for this committee to look at and see, what if anything we want to change or update. This group also has to approve the budget. If you look in in your packets, there should be staff draft capital improvement projects for the next five years. That's what's been proposed in the council in a work session.

Meeting adjourned at pm. 4:58 p.m.
Sonya Debnam
Stormwater Management