Ad Hoc Water Quality Working Group
Report to the Montgomery County Council
July 16, 2010

Appendix B

Meeting Agenda and Minutes

Meeting Topic Summaries

- Background on Clarksburg Stage 4 and Ten Mile Creek
- Ten Mile Creek Baseline Conditions
- Ten Mile Creek, Imperviousness, Water Quality and Environmental Site Design
- Federal and State Regulatory Changes
- Sediment and Erosion Control
- Federal Regulations and Rain for Rent
- Presentation & Discussion Related to Strategies to Protect Watersheds
- Porous Concrete

Ad Hoc Water Quality Working Group
October 28, 2009

Agenda

1) Introductions

2) Presentation

2007 Special Protection Area Report — Mary Dolan, MNCPPC

3) Discussion of Next Steps

What information and topics would the group like to cover?

What speakers should we invite to present to the group?

4) Administrative Items

Contact List

Future Meeting Schedule

Ad Hoc Water Quality Working Group
October 28, 2009

Meeting Minutes

Attendees: Working Group Members – Dusty Rood, Carl Elefante, Rich Thometz, Steve Shofar, Mark Pfefferle, Rick Brush, Keith Levchenko
Guests – Bob Harris, Nancy Aldous, Dale Tibbits, Bob Egan, Carlos Ostria, Mary Dolan
Staff – Joyce Fuhrmann
Members Absent: John Cook, Diane Cameron, Irene Carrato

Joyce Fuhrmann welcomed everyone to the first meeting. The Working Group members and guests introduced themselves. The Working Group received a PowerPoint presentation from Mary Dolan of the Environmental Planning Division at MNCPPC entitled 'Clarksburg Stage 4: Next steps'. The Group had an opportunity to ask questions about the presentation. The Group discussed what topics and speakers they would like to cover in future meetings in order to accomplish the objectives set out in the Council's Resolution. The Group agreed that the first topics to focus on at future meetings are: a presentation on the baseline conditions of Ten Mile Creek including Stage 4; invite Tom Shueler to speak to the Group; and invite someone from the state and rely on other group members to present and discuss new and pending State and Federal regulations regarding water quality, stormwater management, and sediment control.

The Group suggested and discussed other topics to be considered: best management practices beyond those currently in Montgomery County and the state of Maryland – look at what other jurisdictions are doing and/or considering; invite speakers who have real world experience using new progressive technologies; Rain for Rent; Stuart Schwartz (UMBC); and other related considerations such as DOT and DFRS road requirements and WSSC sewer alignments and design considerations.

Joyce Fuhrmann asked that all Working Group members give her contact information in case she needs to reach everyone on short notice.

Ad Hoc Water Quality Working Group
November 16, 2009

Agenda

1) Introductions

2) Administrative Items

Future Meeting Schedule

Discuss Chairmanship for the Working Group

3) Presentation: Baseline Water Quality Data for Ten Mile Creek

Keith Van Ness

Senior Water Quality Specialist
Watershed Management Division
Department of Environmental Protection

4) Discussion of Group's Work Plan

Ad Hoc Water Quality Working Group
November 16, 2009

Meeting Minutes

Attendees: Working Group Members – Diane Cameron, Mark Pfefferle, Keith Levchenko, Steve Shofar, John Cook, Rick Brush, Dusty Rood, Carl Elefante
Guests – Mary Dolan, Claire Islie, Bob Harris, Jim Soltesz, Michael McCann, Amy Quant, Sharon Dooley, Susan Buffone, Bob Egan, Nancy Aldous
Staff – Joyce Fuhrmann
Members Absent: Rich Thometz, Irene Carrato

Joyce Fuhrmann welcomed everyone to the second meeting of the Ad Hoc Water Quality Working Group. The group members and guests introduced themselves. Joyce Fuhrmann announced that Keith Van Ness was unable to present to the group as planned due to illness and that his presentation will be rescheduled as soon as possible.

The group turned to Administrative items, first discussing the best meeting days and times going forward. It was decided that the next meetings will be on December 2nd, December 16th, and January 6th all at 9AM. The group recognized there may be a need to add some meetings in between in order to cover all issues adequately. The group also recognized there might be a need to deviate from the Wednesday morning meeting schedule to accommodate speakers' schedules. Requests were made for assistance with parking accommodations for group members. Joyce Fuhrmann will look into this. Diane Cameron requested contact information for all group members be sent to the group.

The members moved on to a discussion of the Chairmanship for the group. Joyce Fuhrmann indicated that it was up to the group to elect a chairperson if they so chose, or alternatively could choose to have a facilitator with no formal chair. After much discussion, the group decided to have co-chairs. Diane Cameron and Carl Elefante were selected to be co-chairs by the group members present.

Joyce Fuhrmann then circulated a draft work plan based on feedback received from group members and other interested individuals for the group's consideration. (Note: The Draft 1.0 for Discussion is appended at the end of these minutes.) The changes and additions agreed to by the group include:

- an additional bullet to reflect #7 of the council's resolution 16-1149 pertaining to land cover requirements in other SPAs;
- an additional item under the Background section to include an overview of the state of the watershed now – including the Ag parcels;
- specific mention in the Regulations section of a review of new storm water management and sediment control requirements;
- ensuring that the review of the Regulations encompasses all perspectives and interpretations;

- an additional discussion at the conclusion of the series of meetings to review the individual properties within Stage 4 and how the information learned to that point will apply to each;
- inviting Rose Krasnow to give a presentation of the Development Review Process and what is required at various points relating to water quality.

The group discussed the 'Point for Discussion' questions at the end of the work plan and agreed to look at the Regulation and Best Management Practices sections within the framework of Pre-construction; Construction and Post-construction.

There was additional discussion about gathering relevant data. Diane Cameron has some peer reviewed journal articles that she will forward for the group's benefit. Mary Dolan offered the use of GIS at a future meeting if that is deemed helpful by the group.

The co-chairs will work with Joyce Fuhrmann to get the next draft of the work plan out to all group members by the end of the week.

Ad Hoc Water Quality Working Group
Work Plan

DRAFT 1.0 for Discussion on 11/16/09

In its Resolution creating the Working Group, the Council requested that the group

- Study the findings of the 2007 Special Protection Area Annual Report related to Clarksburg
- Collect information on all new and pending State and Federal regulations regarding water quality, stormwater management, and sediment control
- Analyze how these new requirements will impact future development in Clarksburg, especially in Stage 4
- Develop recommendations to improve development procedures to ensure minimal impact on water quality.

Background (meetings 1-3)
Review findings of 2007 SPA Report (received briefing by Mary Dolan)
Review current conditions for Ten Mile Creek (Keith Van Ness)
Review approved or already in use water quality technologies that effect Ten Mile Creek

Regulations (meetings 4-5)
Review new State and Federal Regulations pertaining to water quality
Suggested speakers: Rick Brush; Representative from MDE or Ron Klauda, DNR
Compare and contrast current requirements for properties within Ten Mile Creek Watershed with new regulations

Other Best Management Practices (meetings 6-8)
Discuss other new technologies that may not yet be required by local, state or federal regulations that might be beneficial to Ten Mile Creek.
Examine BMPs from other comparable jurisdictions.
Review current literature on BMPs and emerging technologies.
Suggested speakers: Tom Schueuler, Scott Goetz, Stuart Schwartz
Rain for Rent, others with hands-on experience in new technologies
Discuss BMPs regarding land use and planning, such as environmentally sensitive design and low impact development.
Suggested speaker: Peg Staeheli

Point for Discussion
Could each of these groups be broken into Pre-construction, Construction and Post Construction phases? Or, could we look at the above topics in the context of the construction phases?

Ad Hoc Water Quality Working Group
December 2, 2009

Agenda

1) Introductions, Announcements, Administrative Items (5 minutes)

2) Presentation: Baseline Water Quality Data for Ten Mile Creek (30 minutes)

Keith Van Ness

Senior Water Quality Specialist
Watershed Management Division
Department of Environmental Protection

Q&A (10 minutes)

3) Presentation: Imperviousness, Water Quality and Environmental Site Design (30 minutes)

Thomas Schueler

Coordinator
Chesapeake Stormwater Network

4) Discussion and Q&A (35 minutes)

Ad Hoc Water Quality Working Group
December 2, 2009

Meeting Minutes

Attendees: Working Group Members – Diane Cameron, Co-Chair; Dusty Rood, Rick Brush, John Cook, Mark Pfefferle, Steve Shofar
Guests – Amy Quant, Keith Van Ness, Tom Schueler, Claire Iseli, Mary Dolan, Jennifer Russel, Mike McCann, Bob Harris, Bob Egan
Staff – Joyce Fuhrmann
Members Absent: Keith Levchenko, Rich Thometz, Carl Elefante, Co-Chair; Irene Carrato

Diane Cameron assumed the Chair for this meeting. The Working Group Members and guests introduced themselves. The group discussed its upcoming meetings and decided to plan a field trip to Ten Mile Creek. The preferred date is January 8, 2010 at 8AM. The back-up date is January 15, 2010 at 8AM. Joyce Fuhrmann will work with the Co-Chairs on the logistics. Diane Cameron welcomed anyone to sit at the table if they represented a constituency for whom the working group member was absent. Joyce Fuhrmann announced to the group that Irene Carrato had resigned from Loiederman Soltesz and was now working outside the county. Amy Quant is sitting in for Ms. Carrato, and although she has not been formally appointed to the group by the council her participation is welcome.

The Group received a presentation by Keith Van Ness, Senior Water Quality Specialist, Watershed Management Division of the Montgomery County Department of Environmental Protection. Mr. Van Ness presented his observations about Ten Mile Creek, its current status and unique nature. There was an opportunity for the Group to ask questions.

The Group also received a presentation entitled "Impervious Cover, Stream Health and the Prospects for Mitigation" by Tom Schueler, Coordinator for the Chesapeake Stormwater Network. Mr. Schueler discussed his review of research conducted across the country on impervious cover, its impacts and mitigation efforts, including Environmental Site Design (ESD). The Group had an opportunity to ask questions of both presenters and discuss the information provided.

(Note: For reference, slides from both presentations can be found on the Working Group's website.
http://www.montgomerycountymd.gov/knatmpl.asp?url=/content/council/mem/knapp_m/adhocgroup.asp)

Diane Cameron announced that the next meeting would be on December 16, 2009 at 9AM at the Council Office Building, 6th floor front conference room. The topic for that

meeting will be the Maryland Department of the Environment (MDE) requirements. Joyce Fuhrmann will work with Group members to gather relevant websites and other documents related to current and new MDE regulations and requirements. Group members requested copies of today's presentations. Keith Van Ness will send them to Diane Cameron and Joyce Fuhrmann who will distribute them and post them on the website.

Diane Cameron thanked the guest speakers and attendees and adjourned the meeting.

Ad Hoc Water Quality Working Group
December 16, 2009

Agenda

1) Introductions, Announcements, Administrative Items

Upcoming Meeting Schedule (10 mins)

2) Summary of December 15th meeting at MNCPPC with Environmental Planners and some Working Group Members (20 mins)

3) Review of Working Group Study's scope

Discussion and Approval of Group's Work Plan (30 mins)

4) Review and Discussion – Storm Water Management Act of 2007 (60 mins)

Stewart R. Comstock, P.E.
Regulatory & Compliance Engineer
Maryland Department of the Environment

Ad Hoc Water Quality Working Group
December 16, 2009

Meeting Minutes

Attendees: Group Members – Carl Elefante, Co-Chair; Diane Cameron, Co-Chair; Steve Shofar, Mark Pfefferle, John Cook, Rick Brush, Rich Thometz, Dusty Rood, Keith Levchenko
Guests – Bob Harris, Amy Quant, Jennifer Russel, Mary Dolan, Claire Iseli, Nancy Aldous, Jim Soltesz, Mike McCann, Bette Petrides, Bob Egan, Stewart Comstock (via phone conference)
Staff – Joyce Fuhrmann

Carl Elefante assumed the Chair for this meeting. Bob Harris presented a summary of the December 15, 209 meeting at MNCPPC with Environmental Planners, some Working Group Members and guests. Mr. Harris and Diane Cameron will prepare a written summary for the Group's use.

Joyce Fuhrmann gave an update on the field trip to Ten Mile Creek. County buses are not available for use during rush hour and there is a fee for use. The Group is still very interested in seeing the area first-hand. Mary Dolan offered to help coordinate use of Park and Planning vehicles. The next Working Group meeting will be on January 6th at 9AM. Diane Cameron indicated that she is unable to attend in person, but will join the group by phone for the first hour.

The Group discussed the scope of the Working Group's Study and report. A suggestion was made to limit speakers at future meetings in favor of discussion among Working Group members. The Group discussed this and agreed that it would be beneficial to hear from several other experts in a variety of capacities before formulating the final report to the Council. These other experts and areas of interest include: best practices in new technologies from someone with field experience; someone with more of a building industry perspective; a federal regulatory perspective from Glen Rountree with NAHB; Ernie Sheppe, Fred Jacobs; Rose Krasnow and Mark Etheridge. Rich Thometz, Dusty Rood and Mark Pfefferle are the subcommittee in charge of developing the final list of speakers from whom the Group will hear.

The Group reviewed an outline drafted by Carl Elefante that reflects a proposed report scope. Group Members were assigned sections to begin drafting.

- Mark Pfefferle (with help from Mary Dolan) will draft the background section 'What has been developed in Clarksburg to date? What "triggers" that have been met to bring about consideration of Stage 4 development? Which of these triggers has impact on water quality? ... What is the Stage 4 Master Plan? What factors in the Stage 4 Master Plan affect water quality?'
- Steve Shofar (with assistance from his staff) will draft the section on current water quality conditions in Ten Mile Creek.

- Dusty Rood will draft the section on water quality protection measures and their relevance to the Ten Mile Creek Watershed. 'Water quality regulations; What regulated water quality in the previous Stages of development in Clarksburg? What changes to the regulations will affect Stage 4 development and how? In light of the Stage 4 Master Plan, which regulated water quality issues are of greatest concern? Least concern?' The Group agreed that they need more information before asking someone to write the section on best practices.
- Diane Cameron asked that #7 from the Council's Resolution creating the working group be incorporated into the report to the Council, relating to the County's prior experience in protecting streams via land cover requirements; she agreed to draft that section of the Report. The Group might need to invite Keith Van Ness back to talk about the experience the county has had with other Special Protection Areas.

[Note: For reference #7 is reprinted below:

> Since the approval of the 1994 Clarksburg Master Plan, Montgomery County has gained experience in protecting streams using land cover requirements, including limiting impervious surfaces and maintaining riparian and upland forest cover, in the Upper Paint Branch and Upper Rock Creek Special Protection Areas and in the Sandy Spring/Ashton Rural Neighborhood Cluster Zone in Upper Northwest Branch. Key to the establishment of these land-cover-based watershed protection approaches was the County's recognition of the importance of headwater stream systems. These systems provide the foundation for a stable flow of water, including through maintenance of groundwater recharge levels.]

The Group held a conference call with Stewart Comstock, Regulatory & Compliance Engineer with the Maryland Department of the Environment. He presented some background on the Storm Water Management Act of 2007, how it was developed, key elements and how it will be implemented. Group Members asked extensive questions about the Act and the results anticipated as it is implemented. Mr. Comstock mentioned that he has not had the opportunity to follow the changes in Sediment and Erosion Control regulations and suggested that Ken Pensyl at the Maryland Department of the Environment would be the best person to contact for those issues.

Group Members expressed their concern that the schedule should reflect the work that needs to be completed to meet the charge of the Council by February 1st. The Group decided not to ask for an extension of time, but rather to meet every Wednesday in January and hold an all day 'summit' in January to complete its work. A date for the summit was not selected at this time. Joyce Fuhrmann will work with Mary Dolan on logistics for the field trip, tentatively set for January 8th in the morning.

Carl Elefante had to leave early, so in his place Diane Cameron thanked everyone and adjourned the meeting.

Ad Hoc Water Quality Working Group
January 6, 2010

Agenda

1) Introductions, Announcements, Administrative Items (15 mins)

Review the agenda and logistics for Friday's site visit

2) Establishing the remaining schedule for January (15 mins)

Set the date for the full-day meeting

Review the proposal for the remaining speakers

3) Review and Discussion – 2010 Maryland Standards and Specifications for Soil Erosion and Sediment Control (45 mins)

Rick Brush, Montgomery County Department of Permitting Services

4) Establish a schedule and process to review outlines, report drafts and final report

Ad Hoc Water Quality Working Group
January 6, 2010

Meeting Minutes

Attendees: Group Members – Carl Elefante, Co-Chair; Rich Thometz, Dusty Rood, Rick Brush, John Cooke, Mark Pfefferle, Steve Shofar, Keith Levchenko, Diane Cameron, Co-Chair (via phone)
Guests – Amy Quant, Mary Dolan, Jennifer Russel, Nancy Aldous, Bob Harris, Jim Soltesz, Mike McCann, Claire Iseli, Bette Petrides
Staff – Joyce Fuhrmann

Carl Elefante assumed the Chair for this meeting. The group discussed the logistics for the field trip to Clarksburg on Friday, January 8th. Joyce Fuhrmann will email everyone to get an exact head-count. Those traveling from MNCPPC in Silver Spring need to meet at 8:30AM. Those traveling from the up-county will meet at 9AM (the exact location TBD via email). Given the weather prediction for a snow event on Thursday night/Friday morning, Diane Cameron reminded everyone that January 15th is the back-up date for the trip. Diane Cameron also requested that Keith Van Ness attend the field trip.

The Group reviewed the list of all speakers proposed to present to the Group in the context of the remaining meeting dates in January. Dusty Rood recommended that 'NPDES-NOI State Permit' be added as a topic. Carl Elefante suggested that a discussion on trends involving water re-use in buildings would be useful, too. After much discussion the Group agreed to the following schedule:
January 13th – Federal Regulations, Rain for Rent and NPDES
January 20th – Ernie Sheppe, Fred Jacobs, Mark Etheridge, pervious concrete
January 22nd – Rose Krasnow, Keith Van Ness (on SPAs)
January 27th – All day summit

Next, the Group reviewed a proposal from Diane Cameron on report deadlines. The Group agreed that drafts will have to be reviewed on a rolling basis. Carl Elefante recommended and the group agreed that a group member will be in charge of writing a summary of that week's discussion for the report. The assignments are as follows:
January 6th – Rick Brush
January 13th – Rich Thometz
January 20th – Dusty Rood and Rick Brush
January 22nd – Mark Pfefferle and Steve Shofar

The topics and structure for the all day summit were not finalized. However, there was interest in securing a facilitator for that final session.

Rick Brush led the discussion on the 2010 Maryland Standards and Specifications for Soil Erosion and Sediment Control. He distributed a handout from 'Section A- Planning

and Design' and walked the group through the important changes in this draft. Group members had an opportunity to ask questions and discuss various points throughout the presentation. Rick Brush stated that this is the draft that is out for comment and that MDE's expectation is to have these standards adopted by late spring of this year. Rick Brush stated that he expects Montgomery County would then have a year to adopt new standards to conform to the new state standards, although we do not yet have the official time frame from the state. Due to these expected timelines, the group agreed that whatever is adopted in these new regulations will govern any projects going forward in Ten Mile Creek.

After the conclusion of the discussion on the 2010 Maryland Standards and Specifications for Soil Erosion and Sediment Control, Chair Elefante opened the floor to any other comments or discussion. Hearing none, the meeting was adjourned.

Ad Hoc Water Quality Working Group
January 13, 2010

Agenda

1) Introductions, Announcements, Administrative Items (10 mins)

Review January schedule

Review logistics for Friday's site visit

2) Discussion – Chesapeake Bay Total Maximum Daily Load (TMDL) and 2009 Effluent Limitation Guidelines (ELG) (40 mins)

Glynn Rountree

Environmental Policy Analyst
Water and Wetlands Department
National Association of Home Builders

3) Discussion – Flocculents and Chemical Treatment Systems (40 mins)

John Pierce

Sales Representative
Rain For Rent

4) Discussion – National Pollutant Discharge Elimination System (NPDES) General Permit (30 mins)

Dusty Rood

Working Group Member

Ad Hoc Water Quality Working Group
January 13, 2010

Meeting Minutes

Attendees: Group Members – Diane Cameron, Co-Chair; Carl Elefante, Co-Chair; Rich Thometz; Steve Shofar, Rick Brush, John Cooke, Dusty Rood, Mark Pfefferle, Keith Levchenko
Guests: Amy Quant, Glynn Rountree, John Pierce, Peyton Emerson, Cheryl Imperatore, Claire Iseli, Jim Soltesz, Bob Harris, Mike McCann, Bette Petrides, Bob Egan, Nancy Aldous
Staff: Joyce Fuhrmann

Diane Cameron assumed the Chair for this meeting. Working Group members and guests introduced themselves. The Group reviewed the meeting schedule for the remainder of January. Future meetings and topics are unchanged from the last meeting. They are as follows:

January 15th Clarksburg Site Visit
January 20th Stormwater Management Best Practices and Pervious Concrete
January 22nd Development Review Process and
Montgomery County Special Protection Areas
January 27th All day summit

Dates for drafts of meeting and issue summaries were also agreed upon as follows:
January 20th

Sediment and Erosion Control – Rick Brush
Federal Regulations and Rain for Rent – Rich Thometz
Background on State and Federal Regulatory Changes – Dusty Rood
Imperviousness, Water Quality and Environmental Site Design – Diane Cameron

January 27th

Stormwater Management Best Practices – Dusty Rood and Rick Brush
Development Review Process and Special Protection Areas –
Mark Pfefferle and Steve Shofar

The Group discussed the upcoming site visit to Clarksburg on Friday, January 15th. There will be 2 pick-up locations – one at MNPCCP in Silver Spring at 8AM and the other at the Clarksburg Ombudsman's Office at 8:30. A final list of attendees will be determined via subsequent email.

Glynn Rountree, Environmental Policy Analyst in the Water and Wetlands Department of the National Association of Home Builders made a presentation to the Group on the 2009 Effluent Limitation Guidelines (ELGs) and the Chesapeake Bay Total Maximum Daily Load (TMDL). He reviewed a hand-out 'Fact Sheet on ELGs' and discussed the impact the changing federal regulatory environment will have within the state and Montgomery

County. Working Group members had an opportunity to ask questions of this guest speaker.

The Working Group heard a presentation by John Pierce, Sales Representative with Rain For Rent. He explained the technology Rain For Rent uses for stormwater management including the use of flocculents and chemical treatment systems. Mr. Pierce also described some of their experience with the high-profile ICC project. Group members engaged in a question and answer session with this guest and his colleague at Rain For Rent, Peyton Emerson. Diane Cameron indicated she would forward to the Group and email exchange from one of her colleagues regarding the ICC and problems with stormwater management. John Pierce will get back to the group with more technical information on chemicals used.

The Working Group moved on to a discussion of the National Pollutant Discharge Elimination System (NPDES) General Permit. Dusty Rood led the group through a hand-out he prepared on the Maryland Department of the Environment General NPDES. Working Group members had an opportunity to ask questions on this topic.

Co-Chair Diane Cameron asked if there were any additional issues for the group. Hearing none, she adjourned the meeting.

Ad Hoc Water Quality Working Group
January 20, 2010

Agenda

1) Introductions, Announcements, Administrative Items (5 mins)

2) Briefing – Clarksburg/Stage 4 Tour from 1/15/10 (10 mins)

3) Presentation and Discussion – Stormwater Management Best Practices (45 mins)

Ernest I. Sheppe, III, P.E

4) Presentation and Discussion – Porous Concrete (30 mins)

Steven Tripp

Marketing Manager
Chaney Enterprises

5) Group Discussion (30 mins)

How the information learned can be applied to Ten Mile Creek

Ad Hoc Water Quality Working Group
January 20, 2010

Meeting Minutes

Attendees: Group Members – Carl Elefante, co-chair; Diane Cameron, co-chair; Amy Quant, Steve Shofar, Mark Pfefferle, Rick Brush, John Cook, Dusty Rood, Rich Thometz, Keith Levchenko
Guests – Ernie Sheppe, Steve Tripp, Susan Buffone, Bette Petrides, Jim Soltesz, Nancy Aldous, Ed Wallington, Jennifer Russel, Mary Dolan, Bob Egan, Claire Iseli, Bob Harris, Mike McCann
Staff – Joyce Fuhrmann

Carl Elefante assumed the Chair for this meeting. The group did its traditional introductions of themselves and guests. Joyce Fuhrmann announced that on Tuesday, January 19th, the Council approved the resolution appointing Amy Quant as a replacement for Irene Carrato. Joyce Fuhrmann also announced that hand-outs from last week are available on the web site and that the speakers for Friday have been confirmed.

Diane Cameron gave a brief re-cap of the tour of Clarksburg/Stage 4 that some Group members and guests participated in on Friday, January 15th. She thanked everyone involved in planning and carrying out the tour, including Mary Dolan, Mark Pfefferle, Keith Van Ness and Joyce Fuhrmann. Other participants were invited to share their experiences. Susan Buffone, staff member in Councilmember Berliner's office, offered a few observations.

The Group turned to its first speaker of the morning, Ernie Sheppe. He distributed a hand-out that included his resume, an Executive Summary of 'Strategies for the Protection of Sensitive Streams: Ten Mile Creek' and the full report for 'Strategies for the Protection of Sensitive Streams: Ten Mile Creek' with attachments. Mr. Sheppe discussed the bullets contained in the Conclusions section of the Executive Summary and referred to the full report for more detail. Group members engaged in a question and answer session with this guest speaker. Diane Cameron will correspond with Mr. Sheppe via email on some questions she did not have a chance to get through due to time limitations.

Amy Quant requested the opportunity to present an example of a water quality schematic that engineers at Loiderman Soltesz and Associates (LSA) had put together to show how storm water management techniques have evolved. The chair granted her time for the presentation. Ed Wallington of LSA led the presentation. The group requested that these drawings be scanned in and distributed to group members for future reference.

The Group then received a presentation on porous concrete from Steve Tripp, Marketing Manager for Cheney Enterprises. The Group had an opportunity to ask questions of Mr.

Tripp. Additional information on several references was requested. Mr. Tripp directed the Group to the web site for the Ready Mix Concrete Research and Education Foundation www.rmc-foundation.org and www.PerviousPavement.org for more information. Mr. Tripp agreed to provide slides to Joyce Fuhrmann for the Group's use.

Co-Chair Carl Elefante asked if there were any additional items for today's meeting. Hearing none, the meeting was adjourned.

Ad Hoc Water Quality Working Group
January 22, 2010

Agenda

1) Introductions, Announcements, Administrative Items (5 mins)

2) Presentation and Discussion – Development Review Process and Environmental Considerations (40 mins)

Rose Krasnow

Chief, Development Review

Montgomery County Planning Department, MNCPPC

3) Presentation and Discussion – Montgomery County Department of Permitting Services – Environmental plan requirements and review process (40 mins)

Mark Etheridge

Montgomery County Department of Permitting Services

4) Presentation and Discussion – Experience with other Special Protection Areas in Montgomery County (40 mins)

Keith Van Ness

Montgomery County Department of Environmental Protection

Ad Hoc Water Quality Working Group
January 22, 2010

Meeting Minutes

Attendees: Group Members – Carl Elefante, co-chair; Amy Quant, Steve Shofar, Mark Pfefferle, Rick Brush, John Cook, Dusty Rood, Rich Thometz, Diane Cameron, co-chair
Guests – Rose Krasnow, Cathy Conlon, Claire Iseli, Mary Dolan, Bob Harris, Mike McCann, Nancy Aldous, Mark Etheridge, Bette Petrides, Bob Egan, Keith Van Ness
Staff – Joyce Fuhrmann
Group Members Absent – Keith Levchenko

Carl Elefante assumed the Chair to begin the meeting. Working Group Members and guests introduced themselves. Carl Elefante requested an update on report section drafts. Joyce Fuhrmann has compiled everything she has received to date into one Word document and will circulate it to everyone later today.

The Group turned to its first guest speaker, Rose Krasnow, Chief of Development Review, Montgomery County Planning Department, MNCPPC for her remarks on the development review process and environmental considerations in particular. Ms. Krasnow shared her perspective on Clarksburg in general and offered some lessons learned from her experience as mayor of Rockville before getting into the details of development review. Group members had an opportunity to ask questions throughout Ms. Krasnow's remarks.

Rick Brush introduced the next guest speaker - Mark Etheridge of the Water Resources Plan Review section, Montgomery County Department of Permitting Services (DPS). Mark also heads up the Policy and Design Committee for the department and he is also the plan reviewer in DPS for the Inter County Connector. Mark Etheridge discussed the evolution of stormwater management approaches and how the county's review process has also changed. Rose Krasnow joined this discussion as well to highlight the points at which the DPS requirements and process connect with the development review requirements and process.

Next, Keith Van Ness, Aquatic Biologist Supervisor with the Montgomery County Department of Environmental Protection returned to speak to the group about other Special Protections Areas (SPAs) in Montgomery County. His presented slides – 'Notes from the Field' – that included some data on the 4 SPAs in Montgomery County: Clarksburg, Upper Rock Creek, Paint Branch and Piney Branch. Keith Van Ness announced to the Group that the 2008 Special Protection Area report would be out "any day now." Steve Shofar will ensure that the Group sees it as soon as it is available. Working Group members asked a variety of questions of Keith on his experience with the

SPAs. Keith will send a pdf of the slides he presented today to Joyce Fuhrmann for the Group's future use.

Co-chair Carl Elefante asked if there were any additional issues for consideration. Hearing none, he adjourned the meeting.

Ad Hoc Water Quality Working Group

February 16, 2010

Agenda

Desired Outcomes:

By the end of this meeting, the Ad Hoc Water Quality Group will have:

1. Heard a summary of key points of the background material

2. Identified recommendations to advise the Council on the steps necessary to preserve water quality in Stage 4

3. Determined which Master Plan Option to explore & developed rationale to support the decision

Morning		
9:00	Convene meeting and welcome participants & guests	Joyce Fuhrmann
Plenary I Intro and organization	Welcome and review of Council Resolution 16-11440	Co-Chair
Plenary I	Review today's outcomes	Co-Chair
Plenary	Welcome Review today's agenda Create ground rules	Carmen D'Agostino Manager of Organizational Learning Montgomery College
Break Out I Fact-finding summary	Break out into Small Groups Utilize the written meeting summarizes organized by topic areas A. Planning/ Master Plan and Development review process B. Stormwater Management ESD Practices C. Construction site practices and techniques D. Ten Mile Creek condition and watershed protection Agree on 3-5 key points to present to the group	
Mid-morning	**BREAK**	
Plenary II Fact-Finding	Presentations from the Break Out Groups • Review of four Master Plan Options	

Ad Hoc Water Quality Working Group

February 16, 2010

Agenda

Summaries: Reporting out and organizing of Break Outs II	• Discuss & agree on which Master Plan Options will be explored • Brainstorm ideas that supports the Master Plan Option of your group	
Plenary II Continued	• Review of four Master Plan Options • Discuss & agree on which Master Plan Options will be explored • Brainstorm ideas that describes/supports each selected Master Plan Option	
Break Out II Actions/Options Analysis	• Explore each brainstormed idea in detail so that it is fully developed and clearly understood • Combine like ideas that are simply worded differently	
12-12:30	**LUNCH**	
Afternoon		
Break Out II	Activity: Assess and discuss each Master Plan Option Using the information brainstormed in the previous activity, small groups will complete the Impact/Effort Grid and the Force Field Analysis	
Mid-afternoon	**BREAK**	
Plenary III Reporting Out Action/Option Analyses	Small groups present their work from the Impact/Effort grid and the Force-Field Analysis to the larger group	
Recommendations & reporting out	Consensus-building and report shaping Polling on recommendations to the Council	
	Meeting evaluation	
	Discuss next steps – Process for finalizing the Working Group's Report to the Council	
4-4:15	Meeting close	

Carmen D'Agostino, Montgomery College
HR Center for Professional & Organizational Development
January, 2010

Ad Hoc Water Quality Working Group

February 16, 2010

Agenda

Carmen D'Agostino, Montgomery College
HR Center for Professional & Organizational Development
January, 2010

Impact/effort Grid:

The Impact/effort grid is used when members need to sort through a variety of brainstormed ideas or options. The impact/effort grid is drawn on a sheet of flip chart paper. The potential solutions are individually discussed and placed in one of the four boxes. All items are eventually classified as being:

Category 1: Easy/Major	Items become the priority for immediate action
Category 2: Easy/Minor	Items are also implemented immediately
Category 3: Difficult/Major	Items are the subject of detailed action planning
Category 4: Difficult/Minor	Items are discarded

What's the outcome? Clearly sorted ideas emerge from a mass of random brainstormed thoughts. Grids also make the sorting process more systematic and consensual. Since everyone gets to cast votes or express opinions, the use of grids is participative and objective.

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Force-Field Analysis

Force-field is a structured method of looking at the two opposing forces acting on a situation. It is used when there is a need to surface all of the factors at play in a situation, so that barriers and problems can be identified.

Force-Field Analysis clarifies the resources available and the barriers or obstacles to success. Helps groups understand where they need to focus their attentions.

Force-field is a tool for analyzing situations in order to understand the forces in play. It helps groups make more effective decisions because it lets members look at both sides. It identifies blocks and barriers that need to be solved and is valuable as a means of identifying problems that need to be solved.

Statement is written

• Forces that help us reach the goal • Pros • Assets	• Forces that hinder us from reaching the goal • Cons • Liabilities
✓ **Resources** ✓ **Skills**	✓ **Barriers** ✓ **Problems** ✓ **Deficiencies**

Ad Hoc Water Quality Working Group

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Carmen D'Agostino, Montgomery College
HR Center for Professional & Organizational Development
January, 2010

Topic Summary - Background on Clarksburg Stage 4 and Ten Mile Creek

Mark Pfefferle

Actions to Date

In February 2009, the Executive presented the results of monitoring in the Clarksburg Special Protection Area, the last implementation trigger for Stage 4. In July, 2009 an interagency working group (including County and Commission staff), made recommendations to the Planning Board and County Council to undertake an amendment of the Clarksburg Master Plan to address concerns about protecting Ten Mile Creek in Stage 4 development. In October, 2009, the County Council appointed An Ad Hoc Water Quality Working Group to prepare a report and recommendations to the Council by February 1, 2010.

Background

The Ten Mile Creek watershed (a tributary of the Little Seneca watershed) was identified in the 1994 master plan as having the greatest constraints for development of the Little Seneca's tributaries and the most prone to environmental degradation by development. Sampling data collected in the process of preparing the master plan indicated that Ten Mile Creek had good water quality that supported a diverse environmental community. The master plan identified the combination of relatively healthy streams, existing wetlands, significant woodland and diverse land cover as providing valuable habitats, while at the same time, steep slopes and poor soils limited opportunities for development. These conditions led planners and the County Council to delay development in this watershed until the last stage of implementation. That consideration was to be held until sufficient information was available to determine that the creek's special qualities could be protected, considering the impact of development in other portions of the Little Seneca watershed (as well as other monitoring in similar watersheds).

The 1994 *Clarksburg Master Plan* was adopted with a specific staging plan, "to address fiscal concerns and to be responsive to community building and environmental protection objectives." Key among these was environmental concern for the Ten Mile Creek watershed. Development in Ten Mile Creek is the last stage of the master plan (Stage 4). The staging triggers have been met to consider whether to allow development to go ahead in Stage 4, and the County Council must make a determination to grant water and sewer category changes for this area (with or without special conditions), or to delay those actions pending further study or land use actions.

What "triggers" that have been met to bring about consider development in Stage 4?

Status	Implementation Triggers
✓	Pass enabling legislation for development districts, or infrastructure financing
✓	Establish a new Water Quality Review Process
*	Allocate CIP funding for wastewater facilities for all approved development in Germantown and Stage 4 areas of Clarksburg
✓	Conduct baseline monitoring of ecosystems of Little Seneca and Ten Mile Creek watersheds for minimum of 3 years
✓	A minimum of 2,000 housing building permits have been issued for Town Center and Newcut Road areas
✓	Release the first annual report on water quality for Town Center and Newcut Road areas

*This trigger has not been met, because developer-funded infrastructure is not put in the CIP until a feasibility study has been completed by the developer.

Which of these triggers has impact on water quality?

The triggers are related to water quality in that a Water Quality Review process has been established. This process requires that a Water Quality Plan be prepared to show how the development can meet water quality goals and monitored to determine whether those goals are being achieved. There is no provision for restoration if stormwater management practices are improperly designed, constructed and maintained.

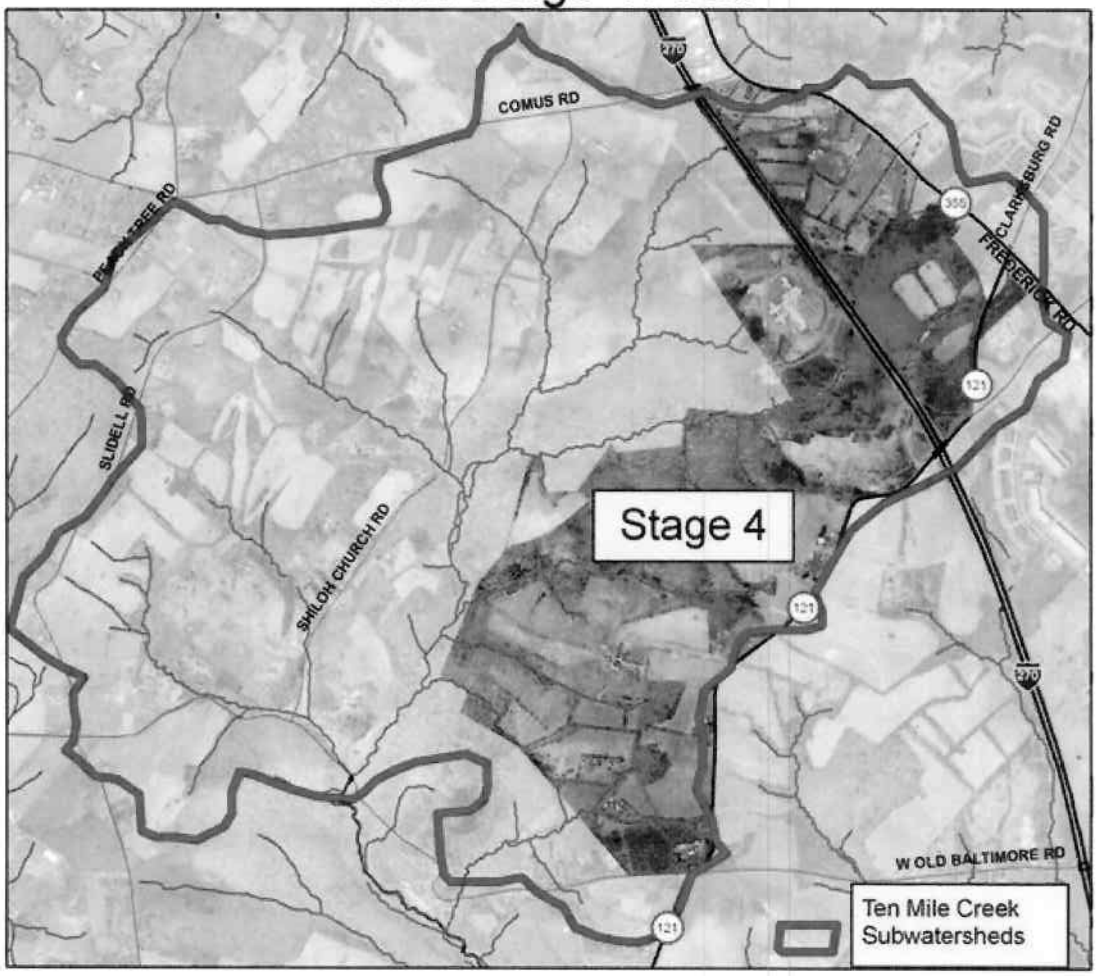
In addition, once the triggers are met, the master plan requires that the "***Council shall*** *draw upon standards established by federal, state, and local laws and regulations and* ***determine if the methods, facilities, and practices being utilized are sufficient to protect Ten Mile Creek.***" They must also assess voluntary measures taken by property owners in the Ten Mile Creek watershed to protect water quality.

How could the quality of Ten Mile Creek have been diminished if the triggers have been met?

- **Ten Mile Creek retains its environmental value and sensitivity**, but it is already feeling the effects of development in its watershed.

It is possible that the stormwater management facilities are not fully in use because construction is not completed, and that effects are the result of construction activities. It is also possible that natural variation in conditions or factors unrelated to land development (materials from the I-270, activities from existing uses, etc.) are causing the water quality conditions to be downgraded to fair in the headwaters. It is important to note, however, that imperviousness is over 12% in the "fair" subwatershed, and other tributaries are not showing degradation.

Ten Mile Creek Subwatersheds and Stage 4 Area



*** What has been developed in Clarksburg to date?**

- There is **significant residential, employment and retail development capacity remaining in the Town Center** that has not been approved **and very little land area outside Stage 4 that has not already been approved for development** in the Town Center. This means that significant development potential remains (see table below) available for buildout in Stage 4 part of Town Center. The Stage 4 Town Center headwaters properties, currently zoned R-200, **will require re-zoning** to MXPD and PD-4 (as designated in the master plan) before they can achieve densities approaching the remaining development capacity.

Planning Subarea	Acres (Approx.)	Residential Dwelling Units	Employment and Retail (square feet)
Town Center District Master Plan, Page 40	635	2,600	770,000
Development Approved As of May 2009		1,213	194,720
Allowable End State Development Potential Remaining		**1,387**	**575,280**

*** What is the Stage 4 Master Plan?**

The **Ten Mile Creek watershed** includes part of the Town Center District and all of the Ten Mile Creek Area in the 1994 Clarksburg Master Plan.

The plan envisioned the **Town Center District** as a strong central focus for the entire master plan area, while also recognizing that a portion of the district was in the headwaters of Ten Mile Creek. The plan included reduced densities relative to the other parts of the Town Center District for parcels closest to the headwaters of Ten Mile Creek. Even with the density reduction, the MXPD and PD-4 zoning can produce relatively high levels of imperviousness and most of the Ten Mile Creek area was placed in the last implementation stage to allow evaluation of protection measures and consideration of additional water quality measures and land use actions.

West of I-270, the master plan provisions for the **Ten Mile Creek Area** recommended a balance of environmental concerns, housing needs and employment uses in the high-technology employment corridor. The provisions included:

- employment sites with development criteria to help address environmental concerns
- low density residential use for land west of MD 121
- low density residential (2-4 units per acre) between the mainstem of the creek and Shiloh Church Road with a substantial area of private conservation area and parkland, and
- the remaining area in the watershed in rural residential (1 unit per 5 acres) and agricultural reserve.

The R&D land in the Ten Mile Creek Area is limited to 15% imperviousness and with uses tightly clustered close to I-270. The residential area west of MD 121 is approximately 600 acres and is limited to a maximum of 900 units, with any units beyond the base density requiring the purchase of TDRs. The plan specifies that at least 70% must be single family dwellings with the open space and conservation areas being undeveloped and forested.

An analysis of the potential for the undeveloped area shows the following:

- There is **sufficient developable land area** to potentially accommodate all the remaining employment and retail and half of the remaining residential capacity planned for the Town Center **on the Stage 4 properties (See table above)**.
- East of I-270, the master plan proposes development related to the Town Center, but at a slightly lower level of intensity. Mixed use zoning is shown to allow residential used nearest the Transit stop, surrounded by Research and Development (offices). Further north, residential uses predominate, with a small amount of retail and the existing power substation.

- West of I-270, the **existing Detention Center** occupies one of the two sites designated for employment, office and Research and Development uses. This site is **limited to 15% imperviousness**.
- The **North County Maintenance Depot** has been proposed to occupy the other R&D site. A facility of this type is necessary to support expanded transit service in the county and smart growth policies. The R&D site is **limited to 15% imperviousness**. The County is currently searching for another site outside the Ten Mile Creek watershed. That study is not yet completed.
- West of I-270, the **developable land area of the RE1/TDR2 properties can accommodate** up to the **900 units (up to 600 units in the base zone, 300 additional units with purchase of TDRs)**, with the potential for up to **25% imperviousness** (based on imperviousness of residential development of a similar density). These properties **do not require re-zoning, but will require the purchase of TDR's to achieve more than approximately 600 units**. The master plan requires that any residential development be composed of 70% single family detached units.
- **The master plan proposes that Stage 4 be served by public water and sewer, if approved by County Council. No sewer is currently available** for any of the properties in Stage 4 (with the Exception of the County Correctional Center and Egan Property on the eastside of I-270), as well as parts of the Historic District that are outside Stage 4, but drain to Ten Mile Creek. Some homes have failing septic systems and would need to be served by a **public sewer system that would be built by developers** in Stage 4.

Choices

The 1994 Clarksburg Master Plan gives the County Council four options for moving ahead with Stage 4 of development in Clarksburg:

Council Options in Considering Stage 4
1. Grant water and sewer changes without placing limiting conditions.
2. Grant water and sewer changes, subject to property owners' commitments to take additional water quality measures.
3. Defer action on water and sewer category changes pending further study or actions.
4. Consider such other land use actions as are deemed necessary.

Topic Summary – Ten Mile Creek Baseline Conditions
Steve Shofar

The Master Plan identified the Ten Mile Creek watershed as an environmentally sensitive area of county-wide significance. The Master Plan further described Ten Mile Creek in the following quotes:

- "…a fragile stream due to its delicate ecosystem, low base flows, and highly erodible stream banks."

- "…Ten Mile Creek exhibits characteristics that make it the most prone to environmental degradation from development."

- "…the most important watershed in the Planning area because it had the best or most extensive natural resources and the highest potential for undesirable development effects."

The Ten Mile Creek watershed consists of an extensive network of small, headwater streams, spring seeps, and wetlands that are critical in maintaining the natural flow of this stream system. Groundwater recharge is conveyed through the springs and seeps to maintain the base flow of the stream and to keep the water clean and cool. Monitoring since 1994 has documented that Ten Mile Creek is an environmentally sensitive area of county-wide significance and is ecologically different from other streams in the Master Plan study area. The Ten Mile Creek watershed as we know it today is the upper portion of the watershed that was inundated when the downstream reservoir was built. This upper portion of the watershed is dominated by headwater tributaries, springs and seeps, all of which provide cool and clean water to the drinking water reservoir. Brown trout—indicators of good water quality—were found again in Ten Mile Creek in 2008. It is not known whether these trout are naturally occurring, but no signs of fish stocking, such as fin erosion, were observed.

2008 stream conditions in Ten Mile Creek have remained the same since the 2007 SPA report, with the majority of drainage areas in the *good* condition. Only the eastern headwater area of Ten Mile Creek remains in *fair* condition. Current imperviousness for this eastern headwater area is 12%. This headwater area partially receives runoff from some of the Clarksburg Detention Center, the new Stringtown Road widening west of Route 355, some commercial development in the I-270 Gateway Center area, portions of the Town Center development, a part of Gateway Commons, as well as runoff from portions of I-270. An investigation was made into possible reasons for the decline (as reported in the 2006 SPA Annual Report) and high conductivity readings were found throughout the drainage area to the station. No specific cause for the high conductivity readings could be identified, but the fragility of the high quality Ten Mile Creek to impacts is very apparent.

Topic Summaries – Ten Mile Creek, Imperviousness, Water Quality and Environmental Site Design
Diane Cameron

Notes from the presentations of Keith Van Ness and Tom Schueler

Keith Van Ness Senior Aquatic Biologist, Montgomery County DEP

Ten Mile Creek was one of the last places where brook trout were found in the 1970s in Montgomery County.

The Clarksburg Master Plan describes Ten Mile Creek as "fragile and sensitive." "Fragile" is defined as "easily damaged; must be handled carefully;" while "sensitive" is defined as: "highly responsive, easily damaged or hurt." This watershed "really is different" than other watersheds that Keith has studied.

Ten Mile Creek:

- maintains summer base flows
- minimizes the response to storms
- has tributaries that function as a refuge for fish
- contains consistently cool water
- supports a high quality biological community
- is a "reference watershed."
- locally-rare amphibians

The Ten Mile Creek watershed has many springs, seeps, intermittent and ephemeral streams. It has many wetlands and vernal pools; DEP staff have mapped each of these. Locally rare amphibians -- longtail salamanders --have been found in Ten Mile Creek and Little Bennett. Examples of sensitive fish species that still exist in Ten Mile Creek include: Rosy-Sided Dace; Stone Rollers and Brown Trout.

Natural Resources Mapping and Buffers
For any development in this watershed, the requirements of the "NRI-FSD" (Natural Resources Inventory – Forest Stand Delineation) would involve wetland and water feature delineation and mapping in the Spring when all of these features are mappable – at other times of year, some of these are less discernible.

Land cover conditions in the Ten Mile Creek watershed as of today include forests and farmlands and rolling hills. An example of a recent development is at the intersection of Shiloh Church and West Old Baltimore Road: 10 houses on large lots.

Highway I-270 sits at the top of these local drainages; other existing developments include the SBA and Gateway Commons at Rte. 121 DEP mapped a 300-foot buffer area on both sides of the streams of Ten Mile Creek as per the Master Plan.

Tom Schueler: Asked whether DEP, in its mapping and groundtruthing, found that the "Zero-Order" streams (the smallest ephemeral streams and associated seeps and springs) had been missed by the USGS in its quad sheets (topographic maps)?

Keith answered yes, DEP found that the topo maps missed many of these zero order streams, so DEP itself mapped these on their own.

Another example of the uniqueness of Ten Mile Creek: there are one or more beaver dams in the stream that enable the nutrients and sediment to be settled out. You can go into the mainstem of Ten Mile Creek and find beaverdams that have survived for years. The mainstem about ½ mile upstream from the ford on West Old Baltimore Road has a large 6 foot tall beaverdam built across it.

Local Geology and Hydrology of Ten Mile Creek

The watershed is characterized by fracture-fault geology in folded metamorphic rocks. The fractured quartzite layers along the faults are the ones that bear the water for the seeps and springs and ephemeral streams. Mapping these water features involves knowing, and mapping, the geologic faults and quartz veins.

Notes that the valleys in Ten Mile Creek watershed are steep (shown in red in one of the maps) and that these steep valleys are another indication of the fractures, folds and faulting of the local geology.

Dusty Rood Asked whether there is evidence of the "Hungry Water" syndrome, whereby some streams that run very clear have been observed to cause erosion. Keith answered that he had not seen head cuts or other evidence of erosion in Ten Mile Creek.

Regarding Summer low flows (Dusty has noted that he has seen the mainstem of TMC go dry sometimes in the summer) – Keith said that "the Ten Mile Creek mainstem sometimes gets very, very low; while the side tributaries maintain their more steady flow year-round. These side tribs serve as the refugia and the breeding ground/ nurseries for these fish."

Dusty asked whether the beaver dams blocked the fish's migration, and Keith responded that he wasn't aware of such blockage having happened.

> **Keith concluded by observing that "Land use and stormwater practices may work better over time, and in other watersheds, but they probably will not provide sufficient protection for Ten Mile Creek."**

Tom Schueler **Director, Chesapeake Stormwater Network**

The Impervious Cover Model

It's easy to produce a fair amount of impervious cover in a given development project. The Impervious Cover Model is represented by a graph based on dozens of scientific studies, that relates stream biological health on the "y" axis with different percentages of watershed total impervious cover on the "x" axis. Total impervious cover is measurable at the watershed level, and this graph relates to total watershed statistics, not to individual site statistics. The "new deal in town" on this issue is "EIC", or "Effective Impervious Cover." EIC relates to the impervious surfaces that are piped or otherwise connected directly to a stream discharge point, whereas Total Impervious Cover counts all imperviousness in a watershed whether it is directly piped to a stream or whether it creates sheet flow into a forested or meadow buffer.

The "Zero Order" streams are important – they matter enormously, and merit the greatest possible protection to keep them going; they serve many functions including as groundwater discharge channels.

The loading of pollutants into a stream increases as imperviousness increases in a watershed.

The Impervious Cover Model has some "prerequisites," factors or assumptions that go along with it – including that land management must be good, e.g. there must be no deforestation.

An implication of the Impervious Cover Model is that if you are a fish or a bug in the stream, your lifestyle changes abruptly once imperviousness is added to your watershed. In Maryland, there have been indications of stream degradation at 2% watershed imperviousness.

Diane Cameron noted that the Planning Staff's Clarksburg Stage IV analysis included a table delineating the current imperviousness levels of the 12 subwatersheds of Ten Mile Creek, and 7 of them are listed as being below 2% imperviousness. (see page 14 of the analysis at: http://www.montgomeryplanning.org/viewer.shtm#http://www.montgomeryplanningboard.org/agenda/2009/documents/20090709_attachment1-analysis_clarksburg_stage4.pdf).

Riparian Buffers and Their Interaction with Levels of Imperviousness

Tom observed that riparian cover helps maintain high water quality levels in watersheds up to 15% impervious cover; Forested buffers are important for biodiversity and geomorphologic indicators (such as stream channel stability).

Dusty asked about differences between different riparian buffer protection strategies, and whether there is a difference in recommended forested buffer width depending on the stream order. Tom responded in the affirmative, and gave the example of Ontario, where there are zero order streams that have been provided buffer protection; with a protocol based upon increased buffer widths for the lower order streams. Tom also cautioned that a buffer strategy alone is not sufficient to protect water quality. For the zero-order small streams, in watersheds that are undergoing development, there are three choices: 1) "Blow it away"; 2) pipe it; or 3) use a Regenerative stormwater conveyance/ in-line bioretention technique (also termed "stepped pool seepage wetlands" and "Coastal Plain Outfalls.")

Tom further noted that there is not much effect or water quality protection actually documented for current Watershed Treatment Practices (e.g. stormwater BMPs) – they are good for Bay nutrient reduction, but not for small stream health or biodiversity protection.

Tom reported that he had scoured the literature, but had not been able to find a single study of development in a watershed of equal to or greater than 25% imperviousness, where BMPs had enabled the maintenance of a high quality stream. These studies have in general been hampered by two factors: 1) lack of whole-watershed treatment examples –the studies have tended to only look at the individual site level; and 2) historically, ponds have not worked.

Construction Phase Issues

Tom said, "Whatever you do, you must consider the Construction Phase." Turbidity, and clearing and grading practices, are important factors and impacts. Typically, with conventional clearing and grading practices, zero order streams are "wiped off the face of the Earth."

Montgomery County is the "Titan of Turf" – with 44% of its land area covered with turf. The rule of thumb is that there is a 3:1 ratio of turf coverage to impervious cover .

Tom said that "it's important to not fixate on obtaining a low impervious cover - fixate also on high percentage of forest cover, and obtaining the lowest percentage possible of turf cover."

Question: Don't the low-density, 2-acre lots we saw earlier create a lot of turf?
Answer: Yes – this is generally true.

Below 10% imperviousness in a watershed, research shows that metrics such as watershed forest cover, turf cover, and stream buffers are strong indicators for stream health.

There is a higher degree of freedom to incorporate ESD solutions in greenfield situations.

Question: With alternative turf care, such as organic leaf mulch applications, and compost amendments, isn't it possible to increase the runoff absorption of turf?
Answer: yes, but compaction during construction is a major factor in the loss of infiltration capacity of soils, down to 36 to 44" deep. That compaction tends to swamp out the effects of soil amendments.

Comment – Cut and fill (e.g. The road building practices that were used in Clarksburg Stages 1 through 3) will come into play, and will wreck the topsoil and the local geology and hydrology. The local geology, as noted previously by Keith, is fragile and with the road and site grading and "hilltop removal" used in Clarksburg Stages 1 through 3, the tilted metamorphic rocks break, and their associated fracture-fault aquifers are compromised or destroyed.

Question – How can you "farm" that soil that's there today to improve upon it?
Answer (not clear).

Construction Impacts: Cut and Fill, Landscape Alteration, and Loss of Zero Order Streams

Comment: Cut and fill will cut up to 60 feet into the soil profile.

Tom - "Terraforming" [re-forming the land with conventional grading and cut and fill practices] makes it impossible to maintain groundwater recharge properties. This and the other factors we've listed brings us to the question: "Is Environmental Site Design to the Maximum Extent Practicable (ESD to the MEP) enough to protect the water quality of Ten Mile Creek? The answer is: Probably not." Getting the full reduction of the 2.6" channel protection volume is extremely difficult to do. The Construction stage impacts are serious and hard to mitigate. Stream crossings, roads, bridges, and buffer encroachment all occur during construction, and have significant water quality impacts.

The full ESD is technically hard to achieve at sites, and even if this volume is achieved, it still does not address other stormwater impacts. These include: hotspots, leaks, spills, and road salt. Chlorides from wintertime road salt applications impact the biota. Keith noted that "We have documented fish kills from road salt."

Comment: MDE's requirements only require 1" up to 2.6" of stormwater volume management on-site via ESD, so you might be able to achieve MDE's numbers on a given site.

Tom: Those are MDE's regulations; that is different than whether reduction of the full Channel Protection Volume [2.6"] can be achieved on a given dense site; it's easier and more doable for the 1" to be reduced on site, but tough to achieve much above that on a dense site.

Question: Is there a threshold of stream loss for the zero order streams, in terms of the rest of the watershed being able to maintain high water quality after a certain portion of the smaller streams are destroyed?

Tom: Overall, a significant watershed protection approach is needed, based on land conservation. There is no set answer to that question – no certain threshold, of whether water quality is maintained if you lose 3 out of 12 catchments, or 6 out of 12, or what have you....what are the implications? It's like asking, "How many fingers can you cut off, and still have a working hand?"

Whatever you do, if you develop the land, there will be some loss of biotic integrity in the system.

Sediment and Turbidity Pollution and the Limits of Mitigation

Keith: Sediment is an enormous impact to aquatic species – these critters are highly sensitive to sediment loads.

Comment: Turbidity is a tricky indicator.

Tom: Seattle Sea-Tac airport has a permit with a 5 NTU (Nephelometric Turbidity Units) limit; generally the only way to achieve this kind of low turbidity consistently, is through an Active Treatment System (ATS).

New MDE construction standards, including turbidity controls for the Piedmont region, are mostly passive systems that don't work as well and as consistently as ATS. During a study we did,
250 NTU was the best we got in Montgomery County sedimentation basins.

Keith – Rick Brush and his shop at DPS did everything they could to reduce construction site sediment in Clarksburg Stages 1 through 3, but the best results were only 70 to 75% [pollutant removal] efficiency.

Rick Brush: Where you lose efficiency is with the smaller particles that stay in suspension and that clog silt fences and filter devices.

Dusty – removal efficiency using percentages has recently been questioned as a valid measure of stormwater BMP effectiveness. For instance, if an influent to a pond has a turbidity level of 1000 NTU, and discharge outflow level of 200 NTU, that's an 80% pollutant removal efficiency; but cleaner initial water yields a smaller resulting pollutant removal efficiency – even if the water coming out of the sediment trap is the same or cleaner.

Tom – Sediment loadings and turbidity are typically higher at the tail end of the construction phase, when they install the pipes and other infrastructure.

Rick Brush – In that case you have direct delivery where there's bare soil and the sediment needs to be trapped. I agree that construction is the biggest weak spot. On a typical construction site, a violation may be longstanding before and after the inspections are done and citations are issued.

Dusty – the Development industry recognizes that stormwater issues are important and of strong current interest.

John Cook – There is really no penalty that matters – the enforcement fines and citations that are issued amount to mere slaps on the wrist.

Amy Quant– What about the new stormwater regulations, don't they require before and after stormwater monitoring? With the new regulations, there will be a better result.

Tom – Agreed with the last statement to a point, but noted that the lack of an enforceable standard for construction site runoff discharges has meant 40 years of the lack of an incentive to really effect a change and apply the best technologies.

With the new regulations, including EPA's new effluent guideline for the Construction and Development industry, there will be a much higher level of importance given to these issues and to enforcement.

Keith – Clarksburg stages 1 – 3 did include ESD practices: swales; permeable pavements; rooftop disconnections.

Tom and Dusty: But admittedly, these things were not enough.

Rick Brush: when the sewer lines were put in, the streams started to degrade. The underground stormwater drainage pipes diverted and intercepted the groundwater adversely.

Claire Iseley: Keith has a section called "SPA [Special Protection Area] Observations" in his presentation – that we have yet to see.
Could KVN come back and circle back to that section?

(Keith came back to the January 22, 2010 meeting to finish his presentation re: SPAs.)

Topic Summary – Federal and State Regulatory Changes
Dusty Rood

In response to State and Federal water quality regulatory and policy changes, the way in which land development projects are planned, designed, constructed and maintained is going to be significantly different than in the recent past. The impetus for these changes is primarily driven by failure to effectively restore the Chesapeake Bay and meet restoration goals. As such, the new State and Federal regulatory programs are focused on the protection of environmental resources and the restoration of degraded resources.

At the federal level, the following relevant and new changes are either in effect or proposed:

- Construction Effluent Limit Guideline (ELG): For the first time, this ELG establishes a numeric limit on the turbidity for runoff from construction activities. This standard shall apply to construction activities and requires that runoff not exceed 280 NTUs. This standard is, in simplest form, an expression of water clarity with 280 NTUs indicating a maximum value, or level, of water clarity.

- Post-Construction Effluent Limit Guideline (ELG): The Environmental Protection Agency (EPA) has begun the rule making process to develop an ELG that will apply to post-construction conditions, or, in other words, active residential communities. The intent is that a numeric limit on typical problematic pollutants after construction will be created.

- Chesapeake Bay TMDL: A TMDL is a pollution budget for a receiving waterway and the Chesapeake Bay TMDL is going to include a specific pollution budgets for 92 sub-watersheds, or segments, within the Chesapeake Bay TMDL.

At the State level, the following relevant and new changes are in effect or proposed:

- SWM Act of 2007 – Environmental Site Design: This Act, scheduled to go into effect on May 4, 2010, requires that land development projects be designed and constructed utilizing environmental site design techniques in order to cause land development projects to perform, hydrologically, like 'woods in good condition.'

- 2010 Erosion & Sediment Control Requirements: These standards are scheduled to go into effect May 2011 and require that land development projects limit disturbed, or graded, areas to not more than 20 acres at any one time, stabilize inactive sites at twice the speed as previously required, utilize chemical treatment systems to remove fine sediments and integrate sediment and erosion control into the project concept designs.

- NPDES Construction Activity General Permit: A new general permit was issued in 2009 that raises the bar for sediment control and erosion prevention. This Permit provides State and Federal oversight of local land development projects and gives the State and

Federal agencies recourse for failure to comply with the terms of the Permit. The Permit conditions include increased site inspections, additional public review and appeals process, remediation requirements, and requirements to comply with TMDLs – such as the Chesapeake Bay TMDL.

Topic Summary – Sediment and Erosion Control
Rick Brush

2010 Maryland Standards and Specification for Sediment and Erosion Control
Excerpts from Section A- Planning and Design and Additional Discussion

Purpose of Revisions

1. Compliance with Stormwater Management Act of 2007 to implement Environmental Site Design (ESD)
2. Requirement for runoff control from the start of the land development process, not just after construction is complete
3. Conservation of natural features, drainage patterns, and vegetation.
4. Monitoring and observation of construction sites indicates varying amounts of degradation of stream systems during construction.

Process –

1. Concept Plan – Gathering, mapping, and analyzing information about the physical characteristics of the site. Identification of drainage patterns, slopes, and natural resources and sensitive areas. Investigating site soil characteristics
2. Site Development Plan – Establish footprint of proposed project and demonstrate the relationship between proposed impervious surfaces and existing natural conditions. Protection of natural resources and buffers. Preparation of detailed designs and grading plans.
3. Final Plan – Refinement of design plans to include final designs, construction standards, phasing, and the sequence of land development activity.

Design Principals

1. Plan the development to fit the site – conserve natural features. Limit the amount of clearing and grading. Reduce the amount of cut and fill.
2. Minimize disturbance – Duration and extent of soil exposure minimized. Phasing and sequencing instead of mass grading. Quick stabilization. Disturbance of no more than 20 acres (or one defined grading unit) at any one time.
3. Protect and avoid natural resources – First voidance, then minimization, and finally mitigation
4. Protect and avoid steep slopes and highly erodible soils – Avoidance of steep slopes. If disturbance of steep slopes is unavoidable, protection strategies include accelerated stabilization and diversion of runoff. Turbidity control measures are required when disturbing soils with high clay content.
5. Stabilize exposed soils as soon as praticable – At a minimum, permanent or temporary stabilization is to occur within 3 calendar days for perimeter sediment controls, and slopes greater than 3:1. Stabilization is required within 7 days for all other areas.
6. Control and manage runoff – Control runoff volume, velocity, and discharge to minimize soil erosion. Diversion of offsite flow and reduction of drainage areas to reduce erosion potential.

7. Use of perimeter controls – Prevent sediment laden runoff from leaving the site.
8. Retain sediment onsite through trapping filtering, and dewatering - Construction and design standards for many types of sediment control measures have been modified and improved in the draft manual.
9. Inspect and maintain sediment controls – The proper installation of sediment control measures is a must. These measures are ineffective if they are not properly installed and maintained.

Topic Summary – Federal Regulation and Rain for Rent
Rich Thometz

I. Emerging Federal Regulations related to water quality and construction activities

A. Chesapeake Bay Total Maximum Daily Load (TMDL)

B. 2009 EPA Effluent Limit Guidelines (ELG) rules

Introduction. Presented by Glynn Rountree, National Assn of Homebuilders (NAHB), Water/Wetlands Department. Glynn has 20 years experience in environmental policy work, focused on water quality and wetlands. His current focus is on storm water and the Chesapeake Bay.

Overview. Glynn provided an overview of the water quality based regulatory trends for construction activities. Glynn mentioned that there are two new federal level regulatory rules [EPA ELGs, and EPA Chesapeake Bay TMDL] that are going to have significant regulatory impacts on the construction industry both during construction and post construction, which are designed to provide far greater protection to water quality nationally and in the Chesapeake Bay region. He noted that Maryland is aggressive in its implementation of Low Impact Development (LID) techniques as being mandated for SWM control. An increasing number of other states are now moving toward LID for SWM for construction activities. LID will be likely be required under EPA's Chesapeake Bay TMDL, which will have an aspirational goal (and mandate) for construction activities, of no net discharge from construction sites.

A. 2009 EPA Effluent Limit Guidelines [ELGs] for the Construction and Development Industry.

(see handout from Glynn Rountree, Fact Sheet, Final Effluent Guidelines for the Construction and Development Industry)

- Rule applies to anyone who has or needs an NPDES construction stormwater permit.
- EPA passed the ELGs rule in December 2009 as a new national regulatory rule, which is required to be met.
- **Numeric Effluent Limit**. For the first time, the rule puts forward numeric turbidity limits for construction activities, with NTUs (turbidity measurement units) not to exceed 280. NTUs in essence measure cloudiness of water. The EPA has not yet issued guidance on how to uniformly measure NTUs for monitoring and compliance. See the handout for phase in periods. The Numeric Effluent Limit requirement will be very expensive to comply with for the regulated construction industry.
- (see handout for further discussion of what is required for construction activities under the new Effluent Limit Guideline rule to protect water quality during construction activities, including pollution prevention measures, prohibited discharges, technologies that Builders and Developers can use to met the 280 NTU Limit, and monitoring requirements. The handout notes that Maryland has stated its intent to implement the ELG into state permits as soon as the rule is finalized.)

EPA is also in the initial stages of developing a national rule to address post construction stormwater requirements.

B. Chesapeake Bay Program TMDL (Total Maximum Daily Load).

- The proposed TMDL for the Chesapeake Bay is expected to be in place by Summer 2010.
  It will act to set maximum pollution loads, for sediment, nitrogen and phosphorus.
- Innovative requirements:
- Holds permits to "maximum extent feasible".
- Independent evaluator will oversee states' compliance, resources, and enforcement to meet the TMDL requirement by state.
- States will issue 2 year milestones, approved by EPA. Consequences for not states not meeting the milestones would be dreadful.
- Rule will set bar for future nutrient levels for TMDLs in the rest of the country.
- Regulated community is stressing that the program must be affordable or it won't meet its goals. Rountree suggests flexibility for compliance, including water quality trading, such as being done in the Ohio River Basin. This is needed to get Agriculture involved, which is fundamental to meeting the TMDL for the Bay.
- Three sectors are primarily impacted by the TMDL:
  B. Agriculture
  C. Construction (development and redevelopment)
  D. MS4s/government activities.
- Very short comment period. Impacted industry feels that this comment period is not enough time to comment and understand the implications of complying with the TMDL.

How the Federal Regulatory Scheme Applies/Will Apply to Ten Mile Creek

- Chesapeake Bay TMDL covers the entire watershed, including Ten Mile Creek. It will override less stringent regulations.
- The TMDL will be a "pollution diet", to meet the designated uses of water quality designations for each watershed.
- Chesapeake TMDL covers all waters in the Chesapeake Bay region (including Ten Mile Creek), whether waters are impaired or not.
- Goal of the TMDL – Chesapeake Bay's water quality health.
- Glynn Rountree has confidence that the new regulatory rules from the EPA will have the effect of restoring and protecting water quality in watersheds throughout the Chesapeake Bay region.

II. Flocculants, Chemical Treatment and Other Water Treatment/Filtration Systems

Introduction. Presenters John Pierce and Peyton Emerson, represent the company Rain For Rent (RFR), a firm established in 1934 In California. The company is focused as a liquid solutions company. RFR water treatment systems for use with construction activities include the use of a wide range of technologies and equipment, and ranges from natural settling and filtering devices, to chemical flocculants use. They analyze what is needed at the particular jobsite, and

then design the appropriate water treatment system to treat the water to meet water quality and discharge requirements.

Flocculants

- Chemical applications to sediment laden storm water that treat the water, and filter out sediment to meet discharge loads.
- Utilize chitosan (biodegradable, made from crushed crustacean shells). Other chemical flocculants can have a more adverse effect on stream systems.
- Toxicity concerns with all flocculants. Chitosan, while more environmentally friendly, still needs to be carefully managed to prevent overdosing, to prevent flocculant laden water from entering streams.

Temperature considerations in using flocculants:

- Chitosan is sensitive to temperatures at or below 28 to 30 degrees F.
- While not as effective at low temperatures, it can be used operationally throughout colder weather periods, by using methods to warm the system and water before treatment. It is being used year-round on the ICC project.
- Other flocculants lose their effectiveness at 45 degrees F or lower.

ICC experiences

- Rain For Rent is the ICC storm water treatment system contractor.
- Stringent discharge limits for ICC construction activities – daily maximum discharge average of 50 NTU (with maximum daily spike up to 150 NTU).
- ICC project was unique for RFR, needed large mobile filtration systems, handling up to 100 to 150 gallons per minute.
- Monitoring and filtering requirements also must be met. Monitoring is done by separate firm.
- Flocculent system can be tested for chemical treatment residue in the treated water. If it is found at an unacceptable level, the system is turned off and treatment modified. Chemical treatment must be correctly and carefully managed.

Sediment Ponds.

- Discharge requirements for the ICC's NTU limits, are for the sediment ponds designed and built for the ICC construction.
- ICC sediment ponds are only allowed to fill to certain level of capacity. Whenever they discharge, discharges must meet the 50 NTU/150 spike NTU daily limits.
- Sediment ponds work best to manage and control sediment runoff and meet discharge limits when their storage capacity is drawn back down (by way of chemical treatment or filtered dewatering devices) between storm events.

Operator Error incident, ICC.

- Filtration trailer, with multiple motorized pumps, and other pieces of equipment, doses chitosan depending on sediment readings.
- Electric meter pump was accidentally left on overnight. Allowed the chitosan dosing system to run all night. Resulted in chitosan laden water running out of system and into the stream the next morning, at overdosed levels.
- Was operator error.
- Chemical flocculants system works, but needs to be managed correctly.

RFR uses Best Feasible Technology for ICC filtration and treatment systems.
They also design with smaller filtration systems that are just as effective dewatering devices.
Fine clays may still need other treatment or filtration if they don't settle out at acceptable levels.
RFR is able to apply best practices daily, to meet the discharge goals and requirements for the ICC construction.

Evolution of water treatment for construction sites such as the ICC:
Moving from sediment and erosion control, to sediment erosion control and turbidity management.
Construction sites are complex – they need active site management of all three – sediment, erosion control and turbidity.

How Rain For Rent filtration and treatment systems apply to construction activities to protect water quality in Ten Mile watershed -

- Systems and technologies exist (such as chemical treatment and filtration systems, and naturally filtering dewatering devices, such as filter bags) to address sediment laden storm water in sediment ponds to avoid discharges in excess of discharge limits from construction sites.
- Actively managing sediment, erosion control and turbidity on active construction sites involves correctly designing, constructing and actively managing a combination of sediment control devices, treatments and systems to keep sediment laden runoff from leaving a construction site.
- Flocculants are Best Feasible Technology systems, designed and used at high cost. Must be carefully managed to avoid potential toxic overdosing and releases into streams.
- Sediment ponds can be proactively dewatered between storm events, to replenish their stormwater retention capacity, through the use of either naturally filtering dewatering filters and systems (when time and pond capacity levels allow) and chemical flocculent treatments to dewater sediment ponds as needed.
- Active construction sites in Ten Mile Creek can and must be proactively managed for sediment, erosion control and turbidity management purposes, to ensure optimum performance of the designed controls, treatments and filters, before and after storm events.

III. National Pollutant Discharge Elimination System (NPDES) General Permit

Introduction: Presenter is Dusty Rood, Water Quality Ad Hoc Committee member, principal with Rodgers Consulting, who heads up Rodgers Environmental team.

Overview. Dusty took the committee through a review of the new MDE NPDES General Permit (effective in 2009), which is the "enforcement teeth for the water quality protection laws at the federal and state levels. See handout of the MDE General Permit for Stormwater Associated with Construction Activity, key items of interest are highlighted.

Highlights of the more stringent requirements contained in the permit include:

- Notice/review/posting process lengthened.
- Permit requirements cover all of Maryland [including development in Ten Mile Creek]
- Contains protection measures for discharges into the Chesapeake Bay or waters subject to a TMDL.
- Other discharges from a construction site are also reviewed for compliance.
- Enforces effluent limits.
- Permit holder must prevent discharges, provide notice of discharges, and remediate discharges. MDE has authority to trigger compliance action.
- Monitoring requirements – weekly inspections and within one day of a rainfall event resulting in runoff.
- Stiff penalties/fine provisions, including up to $25,000 dollar per day fine for each day of violation, and other civil and criminal penalties.

- Regulatory teeth to ensure compliance by permit holders with all water quality plans and laws.

- Assumes that local jurisdictions will create water quality plans and measures to protect water quality, with the NPDES permit giving teeth to enforce compliance with all water quality protection plans. This means that the level of water quality treatment is determined when water quality plans for a construction project are created.

- MDE manages enforcement under the NPDES permits throughout Maryland including in Montgomery County.

How the 2009 MDE NPDES permit and stricter compliance and enforcement provisions apply to ensuring water quality will be protected for development areas of Ten Mile Creek
The 2009 MDE NPDES General Permit provides more stringent regulatory teeth to ensure compliance and enforcement of the water quality plans, based on new water quality protection laws and designed to protect water quality for construction activities that would occur on projects in Ten Mile Creek.

Topic Summary - Presentation & Discussion Related to Strategies to Protect Watersheds
Dusty Rood

1. Presenter: Ernie Sheppe, PE

Ernie Sheppe, a Licensed Professional Water Resources Engineer with 36 years of experience in Maryland, presented recommendations for the protection of Ten Mile Creek, a case study of a successful watershed protection effort concurrent with new development, analysis concerning the problems with utilizing impervious area caps and a comparison of the changes to various water quality regulations.

His full report is attached for reference. Listed below are the key points and highlights from his presentation.

2. Strategies for Protecting Ten Mile Creek

The following strategies were recommended as effective tools to protect stream quality in Ten Mile Creek. These techniques were proven to be successful in other areas of Maryland, including the Red Run watershed as explained further.

a. Preserve or establish riparian buffers

The benefits of forested buffers include but are not limited to cooler stream temperatures and lower dissolve oxygen levels, input of organic matter from adjacent vegetation, a fundamental component of nutrition for aquatic biology, better aquatic habitat, filtration and infiltration of storm water. Data was also provided from a study that demonstrated that the critical buffer width ranges from 40-65' from the stream.

The Ten Mile Creek watershed contains both forested and unforested tributaries. The unforested tributaries have been and may still be actively pastured. The *Clarksburg Master Plan* and *Environmental Guidelines for Development* both require the protection of stream valley buffers through stream buffers. The *Forest Conservation Law* and the *Environmental Guidelines for Development* both require the full reforestation of the stream buffer area.

b. Utilization of 'volume control' SWM facilities that infiltrate (*recharge into the soil*) and/or evapo-transpire (*evaporation and plant transpiration of stormwater to the atmosphere*) storm water

These practices reduce the peak discharge and the volume of stormwater, thereby helping to protect the stream channel. These practices can be enhanced through the planting or natural regeneration of woody plant species that uptake pollutants.

The latest Environmental Site Design (ESD) regulations require the utilization of ESD measures, which include vegetated practices, to treat storm water. The development of Ten Mile Creek will be subject to these requirements.

c. Design, Installation and Maintenance of erosion and sediment control practices during construction

The State of Maryland's pending changes to the Erosion and Sediment Control standards will be more stringent and more protective than in the past. Maintenance of sediment control facilities is critically important – particularly dewatering prior to storms to maintain treatment capacity. In addition to providing sufficient capacity, the dewatering through a filter bag and the sheet flowing through conservation areas helps to remove finer soil particles.

Many of these practices plus other practices recommended in the 2007 SPA Report are contained within the 2010 Sediment & Erosion Control Standards and will be applicable to the development of Ten Mile Creek.

d. Avoidance of stream crossings and encroachments in to the stream buffer

The impact of encroachments to the stream valley can cause adverse effects. Strategies for offsetting these effects include ensuring provisions for fish passage in the design of culverts and stabilization of utility crossings and planting of woody vegetation to provide shading, cooling and habitat. Sediment control is also very important when working in close proximity to streams.

3. Case Study: Red Run Watershed, Owings Mill, Md.

The Red Run Watershed contains the 'growth area' of Owings Mills. This watershed and growth area is very similar to Ten Mile Creek and Clarksburg in that there has been significant infrastructure investment in the area, is located near an interstate highway (I-795) with transit access options (light rail). The watershed is very sensitive as it has consistently supported Trout populations and is a Use III watershed. The watershed was developed over a period of 16 years, from 1984 – 2000.

The watershed was developed predominantly with high-density residential, a mall, a neighborhood shopping center and office space. The development was designed under storm water regulations that are now two generations old. In addition to the storm water design, the community included the strategies described above to further protect the watershed (minimum 100' forested riparian buffers, forest conservation, extended detention ponds with natural regeneration and environmentally sensitive stream crossings for utilities and road crossings).

In 2000, the Maryland Department of Natural Resources studied the watershed and found that Trout populations are present and that the strategies employed to protect the watershed were adequate.

4. Analysis of Impervious Area Caps

This analysis included a summary of the shortcomings and problems with impervious caps. These problems include the inappropriate oversimplification of a complex issue and conflicts

with smart growth initiatives through encouraging sprawl. This summary referenced a study that found that many watersheds with high levels of impervious area (>25%) contained good habitat quality thus suggesting that other factors influenced watershed health.

An analysis of 'micro-caps' was also provided. Micro-caps are impervious caps that are imposed on an individual property, not the entire watershed. Given that all properties are different and contain different levels of resource sensitivity and relation to growth centers, micro-scale caps hinder clustering, density transitioning, and other important planning objectives. The quality of the stream will be influenced by the cumulative effect of the entire watershed.

This is particularly relative to Ten Mile Creek since *'about 64% of the Ten Mile Creek watershed is designated for farmland preservation or rural uses'* (Clarksburg Master Plan, p. 142).

5. Comparison of previous vs. new regulations

A matrix of the changes to storm water management, sediment control, forest conservation and stream buffers was provided. This matrix includes the specific differences under each of these subject areas. For example, regarding stormwater management the size of the contributing drainage areas to BMPs has decreased, which creates more decentralization and distribution of water quality BMPs, thus causing runoff to be treated at its source and mimic the hydrological cycle. Sediment and erosion control standards are changing to limit the amount of ground disturbed at any given time, faster stabilization timeframes and enhanced monitoring for compliance are required. Related to forest conservation, in 2001 the Council amended the Forest Conservation Law to strictly mandate the retention of forests without the option of mitigation for forest clearing. Most communities in Clarksburg were approved before this law went into effect.

Topic Summary - Porous Concrete
Rick Brush

Presentation by Steven Tripp, Chaney Enterprises

1. Discussion centered on porous concrete, not porous asphalt or porous pavers since that is what the presenter markets. Porous asphalt does not have longevity of porous concrete. Pavers look nice but are more expensive.
2. Porous paving has been used in many parts of the country. Florida has used it extensively and successfully.
3. So have other regions, even those with colder climates. Have to careful with the plowing of snow though. Snow plows may need to be modified to prevent damage to the concrete.
4. EPA includes porous paving as one of their recommended best management practices
5. The porosity of the surface concrete layer of a porous concrete system is not a limiting factor.
6. When properly designed, porous concrete systems can be used in areas with poor infiltration rates
7. Porous concrete can be used to replace ponds and other best management practices that may be more expensive to construct and take up valuable space.
8. Maintenance is usually by power washing to remove sand and grit from void spaces in the concrete. However, experience has shown that this does not need be done often
9. Mr. Tripp said the first application of porous concrete in Maryland was in Carroll County. (note – he did not mention past uses of porous asphalt or pavers. Those were successfully installed prior to the use of porous concrete. Also, porous concrete has been used for the last 5-6 years in Montgomery County as well)
10. Porous paving components and materials are about the same cost as standard concrete. However, installation procedures are more expensive. Therefore, the overall cost is more.
11. The construction procedures and methods are critical (note – I agree). They must be stringently followed to prevent failure
12. There is a training and certification program for installation. There are 3 levels of certification. Only the highest certified should by constructing complex installations.
13. Cheney does not supply concrete for Montgomery County. However, others (example – Rockville Fuel and Feed) do.