

MINNEHAHA CREEK WATERSHED DISTRICT

**Technical Advisory Committee
December 3rd 2009**

2:00 PM – 4:00 PM

**Edina City Hall
4801 W. 50TH ST.
EDINA, MN 55424**

AGENDA

1. Discuss potential for lowering Rule N threshold below 1 acre.

MINNEHAHA CREEK WATERSHED DISTRICT

Technical Advisory Committee

Summary of October 29th, 2009

Committee Members Present: Pat Byrne (Mpls), Cara Gehren (Victoria), Kirsten Larson (Carver County), Tony Brough (Hennepin County), James Landini (Shorewood), John Bradford (Hopkins), John Barten (3 Rivers Park District), Rachael Crabb (MPRB), Mike Kelly (Wayzata), Jesse Struve (Edina), Dave Poggi (Mound), Derek Asche (Plymouth), Jack Frost (MCES), Laura Adler (St. Louis Park), Kristin Asher (Richfield), Liz Stout (Minnetonka), Ken Beck (Independence), Brad Wozney (BWSR), Breanne Rothstein (Minnetrista), Bob Moberg (Plymouth), Andi Moffatt (Minnetrista)

MCWD Managers Present: None

MCWD Staff Present: James Wisker

James Wisker summarized the preceding meetings of the TAC, the Board discussions and introduced the preliminary draft of Rule N: Stormwater Management. James asked the TAC to provide comments on areas that may need more clarification and feedback in general on this draft.

Jesse Struve began by noting that the TAC had discussed exemptions for trails as linear projects and that this did not appear to be contained within the linear section of Rule N. Mr. Wisker pointed out that this exemption language was found in Section 2: Regulation. John Barten requested that this language be duplicated in Section 6: Requirements – Linear Transportation Projects.

John also commented that Section 3-b contained a reference to “downgradient site boundary”, and requested that a specific definition of this term be included in the definitions section of MCWD rules.

Laura Adler pointed out that language within Section 3-b-iii appeared to be very similar to language developed by the City of St. Louis Park. It was recommended that MCWD remove this language as each city may choose to address localized drainage issues in different ways.

Bob Moberg followed by noting that flood sensitive areas were defined as areas where stormwater infrastructure is sized to accommodate a runoff event of less than 10 year frequency. Bob commented that most areas of most cities would likely be classified as flood sensitive under this definition. He also questioned if “system” could be defined city wide or just a stretch of stormsewer. Bob also recommended that this language be removed.

Cara Gehren agreed commenting that some cities may choose to flood city streets as a management decision rather than risk structural damage.

John Bradford asked how a linear project that has stormsewer sized for a 5 year event would meet the requirement given spatial constraints within the ROW.

Laura Adler finished by identifying that without this language, the rule would still ensure not exacerbation of existing drainage conditions.

John Bradford moved on to section 3-c and asked the group if they expressed a “preference” for infiltration over other techniques. James Wisker responded that the intent is not to exclude certain management practices and that language revisions would be made so that it was clear, MCWD would not penalize applicants proposing capture/reuse etc.

Breanne Rothstein commented on the phosphorus standards, noting that it appeared that the intent was to require no net increase in phosphorus loading from some pre-settlement condition.

There was wide group discussion of this language. After discussion it was recommended that for agricultural land uses, MCWD should require no net increase in phosphorus loading from a grassland or prairie condition. It was noted that this was a practice employed by both Carver County and the City of Victoria.

The TAC briefly discussed the issue of how these regulations would interact with proposed TMDL’s and implementation plans. The TAC recommended that cities be allocated any credits obtained through implementation of this regulation for both TMDL’s and MCWD load allocations.

The TAC also briefly discussed the maintenance requirements and the Districts ability to require deed recorded declarations for maintenance provisions. James Wisker indicated that this has been a long standing requirement of MCWD and that there hadn’t been any significant issues, but that he would coordinate with individuals before final drafting and adoption of Rule N.

Bob Moberg commented on the volume control credit proposal for trees. He mentioned that he had concerns regarding its implementation as trees are living organisms and are therefore not permanent BMP’s. He also noted that if the District chose to move forward with the credit proposal that the list should include coniferous trees as well as deciduous.

At this point in the meeting, James Wisker provided an overview of how the District would evaluate the potential for lowering the regulatory threshold below the current proposal of 1 acre. He outlined a GIS based evaluation that would be used to perform some basic modeling that would provide information needed by the Board to make this policy decision.

The meeting concluded at approximately 4:00PM

Memorandum

DATE: December 3rd, 2009

TO: Technical Advisory Committee

FROM: James Wisker
District Planner

RE: Draft Rule N: Stormwater Management

During the October 2009 Technical Advisory Committee Meeting, a number of comments were made on the Draft of Rule N: Stormwater Management. District staff, engineering and legal counsel are in the process of incorporating these comments and suggestions into the rule language in preparation for presentation to the Board of Managers in January.

The focus of the December 3rd meeting will be on the proposed regulatory threshold for Rule N. During previous meetings the TAC had determined that for both new development and redevelopment, Rule N would not apply to parcels less than 1 acre in size.

The Board of Managers has requested that staff and the TAC evaluate the threshold of 1 acre to determine if significant additional water resource benefits may be derived from lowering the threshold below 1 acre.

To facilitate this discussion, District staff and engineers performed the following analysis:

Using GIS, 2009 parcels were categorized into the following parcel sizes:

- > 1 acre
- ½ - 1 acre
- ¼ - ½ acre
- < ¼ acre

Parcel, land use and MLCCS data were unioned resulting in a data set of land use, parcel size and percent impervious cover.

This GIS information was used to perform some basic modeling using PondNet, to determine the existing phosphorus load and runoff volume attributed to various land uses within the parcel size ranges listed above.

Three scenarios were modeled:

- Existing Runoff Volume and TP Load
- Future/Proposed Runoff Volume and TP Load
- Future/Proposed Runoff Volume and TP Including Lot Splits

A detailed modeling summary for each scenario is attached.

Also attached is an overall summary sheet that compares the loading and runoff volume from various parcel sizes of single family home and commercial/industrial/institutional/high-density land uses.

A separate page detailing the modeling assumptions has also been included for your reference.

The TAC will be asked Thursday to develop a recommendation to the Board on lowering the threshold for regulation and to provide comment/input to perhaps refine this modeling effort.

If you have questions or comments in advance of the meeting, please feel free to contact me directly.

James Wisker

Jwisker@minnehahacreek.org

952-471-5090 x 206

Parcel Analysis PondNet Modeling Assumptions

Existing Conditions

- Used the PondNet spreadsheet model to calculate runoff volumes and loads
- TP runoff concentrations obtained from MCWD Watershed Management Plan and MN Stormwater Manual
- % Impervious obtained from MLCCS data

Proposed Conditions

- Assumed there was no conversion of land use (i.e., no agricultural land converted to residential)
- No change in runoff volume and load from agricultural, parks, golf course, railway, and undeveloped
- No increase in % impervious for those areas already designated as 88% impervious
- The impervious percent for all other land uses was increased by 15% (i.e., single family detached went from 18 to 20%)

Proposed Conditions with Lot Splits

- As the “proposed condition” calculations except that single family detached $\frac{1}{2}$ acre and greater with an impervious cover of 38% or less were increased to 38%.

MCWD Rule Volume and Load Reduction

- TP load remains at existing condition per proposed rule
- Increase in runoff volume reduced by 69% due to runoff volume reduction BMPs. MCWD has proposed 0.5-inch and 1.0-inch volume reduction standards depending on soils. In their SONAR, the Capitol Region WD reported a 69% annual volume reduction by implementation of a 0.5-inch volume reduction standard. Implementation of a 1.0-inch standard would reduce annual runoff volume by 87%. I chose 69% to be conservative.

SUMMARY OF MODELING ANALYSIS

Single Family Parcel Size	Number of Acres	Existing Load (lbs/yr)	Future Load (lbs/yr)	Load Increase (lbs/yr)	Existing Volume (ac-ft/yr)	Future Volume (ac-ft/yr)	Volume Increase (ac-ft/yr)
>1 acre	42,228.60	3,024.90	3,555.50	530.60	3,709.50	4,360.20	650.70
1/2 - 1 acre	7,247.35	2,901.53	3,326.22	424.69	3,558.23	4,079.03	520.80
1/4 - 1/2 acre	7,120.61	3,440.32	3,957.92	517.60	4,218.96	4,853.71	634.75
<1/4 acre	9,229.28	6,616.03	7,517.00	900.97	8,113.42	9,218.30	1,104.88
TOTAL	65,825.85	15,982.78	18,356.64	2,373.86	19,600.11	22,511.24	2,911.13

Single Family (including lot split) Parcel Size	Number of Acres	Existing Load (lbs/yr)	Future Load (lbs/yr)	Load Increase (lbs/yr)	Existing Volume (ac-ft/yr)	Future Volume (ac-ft/yr)	Volume Increase (ac-ft/yr)
>1 acre	39,284.12	3,024.90	5,440.30	2,415.40	3,709.50	6,671.60	2,962.10
1/2 - 1 acre	7,153.55	2,901.53	3,951.67	1,050.14	3,558.23	4,846.04	1,287.81
1/4 - 1/2 acre	6,923.37	3,440.32	3,957.92	517.60	4,218.96	4,853.71	634.75
<1/4 acre	9,218.78	6,616.03	7,517.00	900.97	8,113.42	9,218.30	1,104.88
TOTAL	62,579.81	15,982.78	20,866.89	4,884.11	19,600.11	25,589.65	5,989.54

Commercial/Industrial/Institutional/High Density	Number of Acres	Existing Load (lbs/yr)	Future Load (lbs/yr)	Load Increase (lbs/yr)	Existing Volume (ac-ft/yr)	Future Volume (ac-ft/yr)	Volume Increase (ac-ft/yr)
>1 acre	3,692.92	4,951.10	5,198.70	247.60	12,156.10	12,534.20	378.10
1/2 - 1 acre	470.84	459.06	473.77	14.71	724.61	744.93	20.32
1/4 - 1/2 acre	398.66	497.37	523.25	25.88	717.98	751.57	33.59
<1/4 acre	338.23	1,096.30	1,162.14	65.84	1,413.58	1,495.60	82.02
TOTAL	4,900.65	7,003.83	7,357.86	354.03	15,012.27	15,526.30	514.03

Legend

Covered under proposed regulation

Existing Runoff Volume and Total Phosphorus Load for Various Land Uses and Parcel Sizes

RO = Runoff in ac-ft/yr

TP = Total Phosphorus in lbs/yr

MCWD Type	Agriculture		Commercial, Industrial, and Institutional; Mixed Use; Multi-unit Residential													Single Family		Major Highway	Railway	Undeveloped	Water	
	Agricultural	Farmstead	Airport	Industrial & Utility	Mixed Use Industrial	Institutional	Retail & Other Commercial	Mixed Use Commercial & Other	Office	Mixed Use Residential	Multifamily	Manufactured Housing Parks	Single Family Attached	Park, Recreational or Preserve	Golf Course	Seasonal/Vacation	Single Family Detached					
>1 acre RO	1071.9	161.3	670.8	1099.8	39.6	1856.6	1220.2	3.9	293.7	38.9	1017.5	1.7	288.8	5273.2	351.4	21.0	3709.5	37.8	11.3	12749.4	2934.2	
TP	932.4	201.7	419.4	687.5	24.8	1160.7	762.8	2.4	183.6	31.8	829.7	1.3	235.5	573.3	38.2	2.3	3024.9	25.7	7.1	10743.0	79.8	
1/2 to 1 acre RO	4.33	0.27	0.77	91.63	1.25	56.78	250.84	0.86	30.45	15.01	131.02	0.00	75.95	67.76	2.30	10.34	3558.23	1.90	0.35	263.10	147.31	
TP	3.77	0.33	0.48	57.28	0.78	35.49	156.82	0.54	19.04	12.24	106.84	0.00	61.93	7.37	0.25	1.12	2901.53	1.29	0.22	221.69	4.00	
1/4 to 1/2 acre RO	14.66	1.36	0.10	38.53	0.37	44.43	223.59	0.22	10.29	13.42	177.51	0.00	170.34	38.68	0.49	10.44	4218.96	1.53	0.00	140.60	47.41	
TP	12.75	1.70	0.06	24.09	0.23	27.78	139.78	0.14	6.43	10.95	144.75	0.00	138.90	4.21	0.05	1.14	3440.32	1.04	0.00	118.48	1.29	
< 1/4 acre RO	0.91	0.00	0.87	17.80	0.00	20.73	178.06	0.64	3.01	29.26	200.83	0.00	942.14	20.14	0.09	3.73	8113.42	3.09	0.28	87.78	18.62	
TP	0.79	0.00	0.54	11.13	0.00	12.96	111.32	0.40	1.88	23.86	163.77	0.00	768.27	2.19	0.01	0.41	6616.03	2.10	0.17	73.97	0.51	
TOTALS																						
RO	1091.8	163.0	672.5	1247.7	41.2	1978.6	1872.7	5.6	337.4	96.6	1526.8	1.7	1477.3	5399.8	354.2	45.5	19600.1	44.3	11.9	13240.9	3147.5	
TP	949.7	203.8	420.4	780.0	25.8	1236.9	1170.8	3.5	211.0	78.8	1245.1	1.3	1204.6	587.1	38.5	4.9	15982.7	30.1	7.5	11157.1	85.6	
PER MCWD TYPE																						
RO	1254.8								15012.2							19645.6		44.3	11.9	13240.9	3147.5	
TP	1153.4								7003.9							15987.7		30.1	7.5	11157.1	85.6	

Proposed Runoff Volume and Total Phosphorus Load for Various Land Uses and Parcel Sizes

RO = Runoff in ac-ft/yr

TP = Total Phosphorus in lbs/yr

MCWD Type	Agriculture		Commercial, Industrial, and Institutional; Mixed Use; Multi-unit Residential													Single Family		Major Highway	Railway	Undeveloped	Water	
	Agricultural	Farmstead	Airport	Industrial & Utility	Mixed Use Industrial	Institutional	Retail & Other Commercial	Mixed Use Commercial & Other	Office	Mixed Use Residential	Multifamily	Manufactured Housing Parks	Single Family Attached	Park, Recreational or Preserve	Golf Course	Seasonal/Vacation	Single Family Detached					
>1 acre RO	1071.9	187.4	756.9	1119.0	39.7	2042.3	1237.9	3.9	304.2	40.4	1054.1	1.9	309.4	5273.2	351.4	24.4	4360.2	40.6	11.3	12749.4	3377.4	
TP	932.4	234.3	473.2	699.5	24.8	1276.8	773.9	2.4	190.2	33.0	859.6	1.5	252.3	573.3	38.2	2.7	3555.5	27.6	7.1	10743.0	91.8	
1/2 to 1 acre RO	4.33	0.29	2.04	92.74	1.25	60.53	254.26	0.86	30.72	15.42	133.69	0.00	83.38	67.76	2.30	11.89	4079.03	2.04	0.35	263.10	169.35	
TP	3.77	0.36	1.27	57.98	0.78	37.84	158.95	0.54	19.20	12.57	109.01	0.00	67.99	7.37	0.25	1.29	3326.22	1.39	0.22	221.69	4.60	
1/4 to 1/2 acre RO	14.66	1.55	0.55	39.12	0.37	47.34	227.41	0.22	10.46	13.93	183.13	0.00	189.86	38.68	0.49	11.91	4853.71	1.73	0.00	140.60	54.55	
TP	12.75	1.94	0.34	24.46	0.23	29.60	142.17	0.14	6.54	11.36	149.33	0.00	154.82	4.21	0.05	1.30	3957.92	1.17	0.00	118.48	1.48	
< 1/4 acre RO	0.91	0.00	1.02	18.06	0.00	21.69	182.23	0.64	3.08	30.03	205.49	0.00	1013.12	20.14	0.09	4.26	9218.30	3.42	0.28	87.78	21.45	
TP	0.79	0.00	0.64	11.29	0.00	13.56	113.92	0.40	1.92	24.49	167.57	0.00	826.14	2.19	0.01	0.46	7517.00	2.33	0.17	73.97	0.58	
TOTALS																						
RO	1091.8	189.3	760.5	1268.9	41.3	2171.8	1901.8	5.6	348.5	99.8	1576.4	1.9	1595.7	5399.8	354.2	52.5	22511.2	47.8	11.9	13240.9	3622.8	
TP	949.7	236.6	475.4	793.3	25.8	1357.8	1189.0	3.5	217.9	81.4	1285.5	1.6	1301.2	587.1	38.5	5.7	18356.6	32.5	7.5	11157.1	98.5	
PER MCWD TYPE																						
RO	1281.1								15526.3							22563.7		47.8	11.9	13240.9	3622.8	
TP	1186.3								7357.9							18362.3		32.5	7.5	11157.1	98.5	
W/ MCWD RULES																						
RO	1281.1								15171.6							20550.2		45.4	11.9	13240.9	3622.8	
TP	1186.3								7003.9							15987.7		30.1	7.5	11157.1	98.5	

Proposed (with single family detached lot splits) Runoff Volume and Total Phosphorus Load for Various Land Uses and Parcel Sizes

RO = Runoff in ac-ft/yr

TP = Total Phosphorus in lbs/yr

MCWD Type	Agriculture		Commercial, Industrial, and Institutional; Mixed Use; Multi-unit Residential													Single Family		Major Highway	Railway	Undeveloped	Water	
	Agricultural	Farmstead	Airport	Industrial & Utility	Mixed Use Industrial	Institutional	Retail & Other Commercial	Mixed Use Commercial & Other	Office	Mixed Use Residential	Multifamily	Manufactured Housing Parks	Single Family Attached	Park, Recreational or Preserve	Golf Course	Seasonal/Vacation	Single Family Detached					
>1 acre RO	1071.9	187.4	756.9	1119.0	39.7	2042.3	1237.9	3.9	304.2	40.4	1054.1	1.9	309.4	5273.2	351.4	24.4	6671.6	40.6	11.3	12749.4	3377.4	
TP	932.4	234.3	473.2	699.5	24.8	1276.8	773.9	2.4	190.2	33.0	859.6	1.5	252.3	573.3	38.2	2.7	5440.3	27.6	7.1	10743.0	91.8	
1/2 to 1 acre RO	4.33	0.29	2.04	92.74	1.25	60.53	254.26	0.86	30.72	15.42	133.69	0.00	83.38	67.76	2.30	11.89	4846.04	2.04	0.35	263.10	169.35	
TP	3.77	0.36	1.27	57.98	0.78	37.84	158.95	0.54	19.20	12.57	109.01	0.00	67.99	7.37	0.25	1.29	3951.67	1.39	0.22	221.69	4.60	
1/4 to 1/2 acre RO	14.66	1.55	0.55	39.12	0.37	47.34	227.41	0.22	10.46	13.93	183.13	0.00	189.86	38.68	0.49	11.91	4853.71	1.73	0.00	140.60	54.55	
TP	12.75	1.94	0.34	24.46	0.23	29.60	142.17	0.14	6.54	11.36	149.33	0.00	154.82	4.21	0.05	1.30	3957.92	1.17	0.00	118.48	1.48	
< 1/4 acre RO	0.91	0.00	1.02	18.06	0.00	21.69	182.23	0.64	3.08	30.03	205.49	0.00	1013.12	20.14	0.09	4.26	9218.30	3.42	0.28	87.78	21.45	
TP	0.79	0.00	0.64	11.29	0.00	13.56	113.92	0.40	1.92	24.49	167.57	0.00	826.14	2.19	0.01	0.46	7517.00	2.33	0.17	73.97	0.58	
TOTALS																						
RO	1091.8	189.3	760.5	1268.9	41.3	2171.8	1901.8	5.6	348.5	99.8	1576.4	1.9	1595.7	5399.8	354.2	52.5	25589.6	47.8	11.9	13240.9	3622.8	
TP	949.7	236.6	475.4	793.3	25.8	1357.8	1189.0	3.5	217.9	81.4	1285.5	1.6	1301.2	587.1	38.5	5.7	20866.9	32.5	7.5	11157.1	98.5	
PER MCWD TYPE																						
RO	1281.1								15526.3							25642.1		47.8	11.9	13240.9	3622.8	
TP	1186.3								7357.9							20872.6		32.5	7.5	11157.1	98.5	
W/ MCWD RULES																						
RO	1281.1								15171.6							21504.5		45.4	11.9	13240.9	3622.8	
TP	1186.3								7003.9							15987.7		30.1	7.5	11157.1	98.5	