RADNOR SWMAC MEETING SUMMARY

ATTENDEES: SWMAC: Paige Maz, Regina Majercak, Charles Boschen, Paul Burgmayer, Joe Schanne, Tim Sass
CH2M: Daniel Wible

PREPARED BY: CH2M
MEETING DATE: May 12, 2016
SUBJECT: May 2016 meeting

YouTube link:
https://www.youtube.com/watch?v=bzBiVumnPJc&index=13&list=PLWSgQZEOk8cWuk_of0zq2i9J-kzoKsYZx

Review of Previous Meeting Minutes

- APRIL 14, 2016 SWMAC meeting minutes – approved with two corrections (changed reference of previous SWMAC meeting minutes from April to March and added as an action item that Steve Norcini would prioritize the list of bridge/culvert repairs arising out of Gannett Fleming's five culvert study prior to the May SWMAC meeting)

Public Comment

- See below and attached for comments from Maya van Rossum (Delaware Riverkeeper and Township resident)

Discussion of Banbury Way/Francis Ave design consultant interviews and recommendation for selection of consultant

- Daniel described the consultant selection process for the Banbury Way / Francis Ave flood mitigation project
  - In response to the RFP, the Township received 8 proposals for the design of this project; Steve and Daniel reviewed all 8 proposals in detail and recommended three firms be shortlisted: T&M, RK&K, and Meliora
  - A selection sub-committee was formed, consisting of Steve, Daniel, and three members of the SWMAC (Paige, Regina, and Tim)
  - The sub-committee conducted interviews with the three firms on 4/29/16 and then followed up with additional questions on 5/2/16; the three firms provided responses to these questions on 5/3/16
  - After additional consideration, the sub-committee unanimously selected T&M based on their qualifications, approach, and their value to the Township; T&M's proposal was also the lowest cost of the three shortlisted firms
  - The formal recommendation of T&M to the Board of Commissioners (BOC) is anticipated to occur at the 5/23/16 BOC meeting
- Regina noted that all three firms were excellent, highly qualified, and give her hope for future stormwater efforts in the Township
- Daniel noted that once T&M has refined the Banbury project through their design process, CH2M could update Township Wide Assessment (TWA) accordingly
- Maya noted the importance of developing objective criteria / checklist for evaluating stormwater projects (i.e. comparing concepts to concepts, designs to designs, prioritizing based on volume reduction, water quality, aesthetics, etc.)

Township Wide Assessment (TWA) Update

- Daniel provided a summary of the results of Task 1 – Identification of Flood Risk Locations in Radnor Township
  - Preliminary problem areas were based on previously documented flooding locations and refined/expanded surface-based flood model of the entire Township for the 25-year, 1-hour event (2.38 inches)
  - Problem areas based on surface-based flood model were identified by examining parcel flooding and right-of-way (ROW) flooding outside of the 100-year FEMA flood zones
  - Tim asked why the 25-year, 1-hour event was selected for this analysis; Daniel noted that it was selected because of its "flashy" nature and for consistency with the previously completed Ithan Creek assessment
    - Daniel also noted that when the model is further refined in subsequent tasks of the TWA, different storm events could be investigated from a flood risk perspective
    - The goal of this particular task was to identify those areas at risk of flooding and the 25-year, 1-hour storm was deemed to yield a greater number of such areas than would a smaller storm event (e.g. 2-year, 1-hour)
  - Daniel presented a map of previously documented flooding locations throughout the Township (via resident complaints, previous engineering studies, interviews with Township emergency personnel, etc.)
  - Joe asked Daniel to confirm that the Conestoga underpass flood location was included in the map (Note: Daniel confirmed that this location was not included in the map and will make sure it gets added to the revised version)
  - Daniel noted that there is a "master" spreadsheet of flood problem locations that corresponds with the map; should new flood (or erosion) problem locations come to light, CH2M can update the spreadsheet/map accordingly
  - In addition to topography, the surface-based flood model uses several parameters such imperviousness based on land use data, estimated soil infiltration rate, etc.
  - The results of the surface-based flood model were presented in a map showing color-coded flood depths ranging from 0.1-25 feet; scatter plots for the flooding volume within parcels and the percent of parcel area flooded were presented
    - Looked for areas with a high density of parcels with both high flooding volume and percent of parcel area flooded
  - Daniel presented a map that showed parcels color-coded by their percentage of area flooded (i.e. with flood depth greater than zero) for the 25-year, 1-hour event outside of the 100-year FEMA flood zone
  - The results of the parcel flooding analysis were presented in a map depicting circled "clusters" of areas with a high density of flood locations within parcels
    - Regina asked if the 10-year event could also be investigated; the 10-year event might provide a more reasonable picture of actual flooded area, especially at the "fringes" of the flood, compared to the 25-year event
    - SWMAC questioned why certain areas of flooding were not included in the identified clusters (e.g. areas in the Meadowbrook Run watershed)
  - The results of the ROW flooding analysis were presented in a map depicting circled clusters of areas with a high density of flood locations within roadways
  - The results of both the parcel and ROW flooding analyses were presented in a map depicting circled clusters of areas with a high density of flood locations within parcels and roadways; this map also showed points for previously documented flood locations, potential flood prone locations from the model, and flood locations that were both previously documented and "verified" by the model

        - Joe expressed concern that various isolated areas of flooding throughout the Township might have been too easily dismissed from the analysis; Regina and Paul echoed this concern, stating that any potential flood location that was both previously documented and "verified" by the model are worthy of further consideration
    - Daniel noted that the purpose of this task was to identify those areas of the Township where more refined modeling would be conducted; by clustering areas with a high density of flood locations and analyzing their flood metrics, the various clusters could be compared to each other, with the highest ranking ones being advanced into the more detailed modeling phase
        - General SWMAC consensus that additional information was needed regarding those flood locations not included in one of the identified clusters (i.e. description of flooding, frequency, etc.), especially those that were both previously documented and "verified" by the model, and whether any of those locations represented "critical" or at least "severe" safety concerns
        - General SWMAC consensus that the four areas at the northwestern corner of the Township (identified on the map as areas A, I, J, and K) be advanced into the next phase of the TWA
        - Daniel noted that a working session with representatives of the SWMAC may be a good idea at this point in the analysis
        - A map depicting delineated drainage areas for each cluster of problem areas was presented
        - Daniel presented a bar chart that compared the following metrics for the 12 identified and delineated problem area drainage areas: flood volume, flooded area, percent of problem area flooded, and percent of flood volume within the ROW; Daniel also presented a table summarizing this same information, as well as the average flood depth within the ROW and the number of previously documented flood locations within each problem area drainage area
        - Paige requested that CH2M update the map to include unique problem area identification numbers that could be cross-checked against the "master" spreadsheet
        - Joe stated that area G should also be one of the areas that are advanced into the detailed modeling phase of the TWA
        - Daniel noted that multiple nearby flood locations in the model were sometimes combined in order to improve the clarity of the map; the combined locations were located in or near the center of the multiple flood locations
        - Maya suggested that the severity of previously documented flood locations should be considered (i.e. what is being flooded? how it being flooded?)
    - Daniel briefly discussed the next steps in the TWA (Tasks 2 and 3) and noted the possibility of getting key storm sewers surveyed for the purposes of the detailed model
    - Significant, existing stormwater management facilities in the Township will be included in the TWA; however, inspecting / assessing the condition of each stormwater management facility in the Township is beyond the scope of the TWA

Review of prioritization of infrastructure, flooding, and other stormwater projects

- Daniel discussed the 5/12/16 Stormwater Tracking Table
    - For the sake of legibility, some of the information in the actual spreadsheet version of the Tracking Table is hidden in the handout version
    - Steve added a "priority" column to the Tracking Table and also assigned his priorities to the repair/maintenance projects (high, medium/high, medium, and low)

  - General SWMAC consensus that further differentiation between the assigned priorities of the repair/maintenance projects is needed. SWMAC noted that using all SW funds for the Township identified seven (7) high priority repair/replacements would use nearly three years of SW budget. This is in direct conflict with BOC approved SW budget that uses 2/3 of SW funds on SW capital improvements and ~20% on repairs/MF4, etc.
  - SWMAC unanimously agreed that the Township needs to prioritize repair/replacements based upon predicted remaining life of existing system.
- Tim suggested that some sort of benchmark ($/gal?) be used to compare apples to apples; there could be two different benchmarks (one for "detention" projects and one for "flow" projects)
  - Regina suggested that severity of safety hazard risk be considered; Regina also noted that it is questionable whether the culverts projects are in fact stormwater management projects
- Joe suggested that the following two items be further discussed: 31 Highview Drive outfall and Mill Dam; other repair/maintenance items on the list should be shelved for now, as it could be argued that they are not actually stormwater management projects or in imminent need of repair
- Paige noted that repair projects are currently funded out of the stormwater management budget
- 31 Highview Drive outfall: CH2M is currently working on a proposal for surveying, geotechnical, and design services; the design will likely include outfall stabilization, as well as a storage / infiltration trench on Highview Drive to reduce the volume of runoff discharging from the pipe
- Paul asked that the N. Wayne basin be prioritized as a repair project
  - Regina noted that since fully reconstructing the basin might not happen any time soon, repairing the basin to its original capacity in the near future is worth considering
  - Tim reiterated his suggestion to develop benchmarks for comparing repair projects to repair projects and retention/detention projects to retention/detention projects; there should be a quantifiable way for comparing the benefits of these projects
  - Maya noted that projects that infiltrate stormwater runoff should be given higher priority than retention/detention projects, which are known to create problems downstream
    - An infiltration strategy reduces the volume of runoff that reaches receiving waters and is therefore beneficial
    - A better approach is to look at the relationship between every dollar invested in a flood reduction strategy compared to how much flood damage is avoided
    - Other benefits, such as water quality and aesthetic improvements, should also be considered for comparing/prioritizing projects; infiltration projects will have much greater water quality benefit than detention projects
  - Daniel noted that prioritization of potential flood mitigation projects is part of the TWA; Daniel also noted that culvert repair projects generally do not provide stormwater management benefits, but are replacement in-kind type projects
  - General SWMAC consensus is that anticipated life expectancy of culverts and other such facilities is needed before funding decisions can be made

Old/New Business

- Mill Dam – Daniel noted Steve's request for the SWMAC to authorize Gannett Fleming to provide a proposal for the repair of Mill Dam
  - Regina noted that she disagrees with the proposed solution (in Gannett Fleming's report) and suggested that this is really more of a road repair project that should be funded out of the Township's maintenance funds (not stormwater)
  - Paige questioned whether or not the Township is in fact responsible for the abandoned pipe that is the apparent cause of the road instability
  - SWMAC would like the Township Solicitor to provide a legal opinion as to who is ultimately responsible for the repair of the abandoned pipe at Mill Dam; the question also came up whether this should even be in the SWMAC's purview

  - General SWMAC consensus that this is a repair project and not a stormwater management project; the SWMAC would prefer to spend stormwater dollars on beneficial stormwater management projects; Joe to draft a statement to this effect (to be sent to Steve and Daniel)
  - Regina suggested that the lines of communication between the SWMAC and BOC be improved; the SWMAC should provide the BOC with a brief update of key items discussed at most recent SWMAC meetings
- Maplewood Avenue Outfall / Odorisio Park – Daniel noted that Steve shared photos of the eroded channel in 2015 and that Steve recommended Meliora provide a design proposal for addressing this problem area
  - SWMAC requested additional information on this before a decision can be made
- Radnor Middle School connector pipe – Gannett Fleming continues to coordinate with the potentially impacted utilities on S. Wayne Ave

Next SWMAC meeting: 6/9/16 (Radnorshire room)

Action Items

- **CH2M** to ensure that the Conestoga underpass flood location is included on the Township flood location map
- **CH2M** to update Township flood location map to include unique location identification numbers that correspond to the master flood location spreadsheet so that flood locations not in one of the areas where further modeling will be done can be adjudicated
- **CH2M** to create flood map of 10-year, 1-hour storm for comparison purposes
- **Steve** to provide clarity on repair prioritization
- **CH2M/Steve** to request that the Township Solicitor provide a legal opinion as to who is ultimately responsible for the repair of the abandoned pipe at Mill Dam

5/13/16

To: Stormwater Management Advisory Committee
From: Maya van Rossum, the Delaware Riverkeeper
Re: 5.12.16 Committee Meeting
Cc: Radnor BOC

Dear Committee Members and Radnor Board of Commissioners,

Criteria to Guide Project Selection and Goals.

I would like to, once again, urge the committee to identify and prioritize the criteria it will use in its decision-making. I have given this comment during public comment and in follow up written comments repeatedly since the time this committee was first formed. I think it is urgent that the committee undertake this process immediately so that the community can be engaged in an objective and helpful way and the criteria do not get created in the context of considering one particular project or another—as it has been to date, with the result that the guiding criteria have shifted and changed with each decision that has been made and the value of objective criteria has been lost.

I think there are two areas where clear criteria sets are needed.

1. The first set is for determining what areas of flooding in the township you want to advance for the additional modeling that is to be done for select areas by CH2M.
2. The second set is to guide which projects will be selected for design and implementation and what qualities you would like to see addressed with each project designed and moved to implementation.

Without these two sets of criteria, every presentation and discussion of options is done in a vacuum and totally dependent on what committee members are present at any given meeting, what members of the public have attended a given meeting to present information, and what township staff or board members have spoken with the committee or public before or during the meeting.

In prioritizing areas for the additional modeling effort by CH2M it may be of value to consider:

- ✓ Prioritizing for areas where the damage being sustained includes first floor flood damages versus basement flooding.

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- ✓ Prioritizing areas where the flood damages mandate a stormwater project versus a structural enhancement (such as impacts to power boxes where there is a more cost effective solution, such as moving them to the first floor of a home).
- ✓ Prioritizing areas with a certain frequency of flooding or where a minimum number of structures are impacted.
- ✓ Prioritizing areas where investment in a stormwater strategy can help avoid harms that would require future expenditures. For example, flooding that is causing erosion that is undermining bridges or impacting culverts that will be in need of future repair if the issue is not addressed.
- ✓ Possibly prioritizing areas where the township caused or contributed to the problem
- ✓ Possibly prioritizing impact to roadway travel.

In setting criteria or guidance that will be used to guide design and selection of different projects or strategies for addressing a particularly area of flooding, you may want to ensure consideration of the following issues:

- ✓ Is it important to ensure that when considering among different options that fees will be invested in projects that provide multiple benefits? For example, that priority support is given for projects that will address flood damages while at the same time providing other benefits, such as
    - ➢ preventing erosion from damaging infrastructure or property,
    - ➢ improving water quality so as to help the township meet clean water regulatory obligations, and
    - ➢ enhancing the community by providing for recreational opportunities.
- ✓ Should prioritization be given to projects that result in volume reduction over projects that are mere conveyance or peak rate controls but allow the volume of stormwater to remain the same or grow, given that volume reduction provides near term, long term and permanent protection?
- ✓ Do you want to ensure projects benefit a minimum number of residents or achieve other articulated community objectives?
- ✓ Do you want to ensure prioritization is given for projects that address first floor flood damages versus basement or yard flooding?
- ✓ Do you want to ensure that projects that will cause or contribute to other adverse impacts in the Township—such as increased erosion of downstream properties or perpetuation or increase of water quality problems that will impede the township's ability to meet present and future regulatory obligations, that will have adverse impacts on aesthetics, property values or recreation—will be avoided?
- ✓ Do you want to prioritize projects installed on public lands versus private lands or allow co-equal consideration of both? (In previous committee discussions it seems to have been presumed that only public lands are an option, but this guidance was never discussed and officially decided upon.)
- ✓ Can projects that will benefit Radnor communities be located outside the municipal boundaries? If so in what circumstances?

The creation of these criteria and consideration of these issues would be an important way to engage the public early on in the process and secure community input to guide your decisions overall, as opposed to making decisions in a vacuum, project by project. It would also allow for more thoughtful

and objective community discussion unburdened by the high emotions and concerns that accompany discussions focused on whether or not to implement a particular project under consideration. And it will help the Committee identify and prioritize the best projects for stormwater fee investment.

Dollar Per Gallon Calculation Suggestion:

The suggestion that all projects be compared on a dollar per gallon of water detained is not an effective or informative measure for determining the best investment for stormwater funds. It is an overly simplistic and shortsighted calculation that does not reflect the realities of flooding costs. A more informative calculation would look at flood damages avoided for every dollar invested and allow room for consideration of other impacts such as avoiding other harms like ongoing or increased erosion or pollution harms.

A calculation that determines how much money is spent per gallon of water handled by a stormwater project does not provide a meaningful data point for decisionmaking. For example, comparing the cost of detaining a gallon of water in a detention basin versus the cost per gallon of a system that infiltrates and therefore reduces the volume of water dumped into a creek is comparing apples to oranges. Detaining water simply shifts the location and timing of impact; volume reduction avoids the harmful impacts all together. And so even though the volume reduction project might cost more per gallon, the level of benefit in avoiding flood damages is far greater; particularly when you consider that this approach not only avoids damages to homes, but it also avoids erosion and pollution harms that inflict additional costs on the township to resolve.

Detention basins are by design only meant to focus on the peak rate part of the flooding problem—they don't address the increased volume of stormwater that is discharged into a creek and is the cause of increased flooding downstream. And in fact, because detention basins take no action to diminish increasing stormwater volumes, and discharge the increased volume of water collected directly into the creek, at a greater volume over a longer period of time than in a natural condition, they can actually exacerbate flooding and flood damages, including harm to structures, increased erosion, and increased pollution problems.

Preventing or reducing the volume of stormwater runoff discharged to a creek and on downstream communities is most often a far better investment. By preventing and reducing runoff volume these strategies prevent the stormwater that otherwise causes or contributes to flooding. Stormwater strategies that reduce runoff volume also reduce runoff velocity and pollution, and as a result they provide protection to our properties, bridges and roadways from erosion; protect our creeks from pollution (which helps reduce the cost of complying with state and federal laws); and make our creeks safer places for kids to visit, fish and play. Volume reduction strategies often can support recreation elements and offer aesthetic beauty that enhances the community and can even benefit the value of nearby homes.

Thus every dollar invested in reducing stormwater volume provides greater flood damage reduction benefits—including helping to solve other costly township problems as well as providing other community enhancements—and is generally a far better near term and long term investment than a mere detention or conveyance strategy. In short, a dollar per gallon of water detained provides far less benefit and value than a dollar invested in a volume reduction strategy, particularly if it includes infiltration and vegetation assets.

The following are the kinds of multiple benefits that you should be looking for in any stormwater investment you make:

- Flood damage reduction.
- Erosion undermining infrastructure (e.g. roads and bridges), undermining trees, and eating away public and private lands.
- Water quality improvements, including those that will help meet permit requirements and negate the need for additional investments to meet those legal obligations.
- Recreational opportunities (e.g. the system being proposed for West Wayne that would include walking and viewing paths for the community).
- Aesthetic beauty.
- Potential market value enhancements for nearby homes (the value of trees and healthy habitats has been shown by study to improve the market value of homes by 6 to 15 to even 30%).
- Avoidance of safety hazards (detention basins can pose known safety hazards and/or mosquito problems).
- Groundwater recharge helping to support drinking water and base flow of streams (some in the township rely on well water; so, from a drinking water perspective recharge is as important as stream protection).
- Wildlife and aquatic life habitat.

This list is not exhaustive but I think it gives you a sense of the kinds of multiple benefits you can and should expect from any stormwater dollars invested.

Regarding Memo on Emergency Services Flood Risk Locations:

I would like to point out two discrepancies in this document that need to be addressed. In the memo Lt. Chris Flanagan is reported to have said that twice every five years flooding makes roadways impassable even for fire trucks. Similarly, the memo includes in its summary ambiguous language regarding "vehicular access" that gives the suggestion that flooding has prevented fire trucks from getting to or from the station house. And yet, Chief Joseph Maguire, the Radnor Fire Chief, clearly stated that "Reports of roads being impassable by fire trucks are exaggerated," that "fire trucks have been able to drive through flood waters in N. Wayne" and that while the Radnor Fire Company station "gets flooded on occasion," "trucks can still get out ok."

Given the Fire Chief's clear statements contradicting Lt. Flanagan's false assertion or the summary suggestion regarding ingress and egress from the fire station, I think this memo needs editing. If you retain Lt. Flanagan's statement then immediately following you need to refer to the Fire Chief's contrary comments. And the Summary bullet point referencing this needs to be edited to be clear that fire trucks have not, according to the Fire Chief, been impacted.

Respectfully,

Maya K. van Rossum
the Delaware Riverkeeper