



25 August 2015

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Re: Village at Grand Traverse Stormwater Collection & Treatment System

Dear Mr. Iacoangeli, Mr. Zollinger, and Planning Commissioners,

I am writing on behalf of The Watershed Center Grand Traverse Bay to express our concerns about the stormwater collection and treatment system at the Village at Grand Traverse (VGT). Stormwater runoff from urban sites is the most significant threat facing the Grand Traverse Bay watershed. The VGT site is the largest new development site in our watershed and is challenged by clay soils and its close proximity to protected wetlands and Acme Creek. It was the site of serious stormwater violations and costly remedial measures last fall. Moreover, the Special Use Permit for this site requires the use of “innovative stormwater control techniques which shall comply with Best Management Practices to remove sediment, control nutrients and pollutants, and provide infiltration of the stormwater throughout the site.”¹ For all these reasons, it is particularly important to The Watershed Center that the permanent stormwater control system at this site is designed to prevent sediment-laden runoff from leaving the site.

While we hoped for a comprehensive and innovative stormwater system at this site, at a bare minimum the system must meet all requirements in the Acme Storm Water Control Ordinance (2007-01) and be designed in accordance with standard Best Management Practices (BMPs) as established by the Michigan Department of Environmental Quality (DEQ). We have analyzed the available plans and consultants’ memorandums and letters, and we attended the June 8, 2015, Planning Commission meeting where the system was discussed. Our review of the system shows several design deficiencies that may result in system failure and cause serious adverse impacts to the nearby wetlands and creek. We request the Township reassess its approval of the VGT stormwater control system to address these and any other latent deficiencies, so

¹ Special Use Permit, Section 5.11. The Special Use Permit, in Section 5.12, also requires, “[p]rior to or during site plan approval, the Applicant must (1) verify the use of Best Management Practices according to state and federal laws to minimize the impact of the approved Conceptual Plan on the environment, including Acme Creek.”

the system at least meets the minimum Ordinance and BMP requirements to protect the surrounding wetlands, Acme Creek, and ultimately Grand Traverse Bay.

1. Inaccessible Location of Outlet Control Structures:

The Storm Water Control Ordinance, Section 2(E)(3)(d)(ii)(10), Storm Water Facilities, Detention Systems, Outlet Design (at page 18), requires that “Outlet control structures shall be placed near or within the embankment to facilitate maintenance access.” Similarly, the Michigan Department of Environmental Quality Nonpoint Source Best Management Practices Manual (DEQ BMP Manual)² for Wet Detention Basins (at WDB-3) provides that “All outlets should have an accessible, above-ground cap to allow easy cleaning. The outlet should be designed so that trapped trash and debris can be easily removed.”

The outlet control structure for each Basin is located more than 30 feet from the Basin embankment and will be submerged when the Basin is full. It will likely be necessary to pump down the Basin or use a boat or waders to reach the outlet control for maintenance and cleaning. These impediments to routine inspection will likely result in less frequent and less effective inspections, maintenance, and cleaning. Further, the inaccessible location will lead to delayed emergency blockage removal.

2. Narrow Outlet Riser Pipe:

The Storm Water Control Ordinance, Section 2(E)(3)(d)(ii)(8), Storm Water Facilities, Detention Systems, Outlet Design (at page 17), requires that “Riser pipes greater than 5 feet in height shall be 48 inches in diameter.” As noted above, the DEQ BMP Manual for Wet Detention Basins (at WDB-3) provides that the outlets should allow for easy cleaning and blockage removal.

The riser pipes for both Basins are over 8 feet in height with a 36-inch diameter. The deficient pipe diameter limits accessibility to the bottom of the structure for cleaning and removing blockages from the inlet orifices and outlet pipe.

In a June 18, 2015, letter, Mr. Iacoangeli waived the requirement to comply with the 48-inch diameter provision in the Ordinance on two bases: installing new risers would delay site revegetation, and the narrow riser pipe “can be adequately cleaned.” There is no explanation for how installing wider outlets inside the Basins would delay site re-vegetation. Further, there may be ways to minimize downtime of the Basins by, for example, constructing new outlets offsite or along-side the existing outlets while they remain in service. Moreover, the risks associated with system failure due to limited accessibility outweigh potential site revegetation delays caused by repairing the issue, so it is short-sighted to waive the sizing requirement on this basis. Finally, as a practical matter, it is difficult to understand how to easily clean the bottom of a 36-inch pipe, and the outlet pipe located within it, inside an 8-foot riser located 30 feet from a berm.

² Available at http://www.michigan.gov/deq/0,4561,7-135-3313_51002_3682_3714-118554--,00.html.

3. Lack of Base Flow Supply for Wet Detention Basins:

The Storm Water Control Ordinance, Section 2(E)(3)(a), Storm Water Facilities, Detention Systems, Physical Feasibility (at page 15), requires that “A reliable supply of base flow is required for wet basins to prevent excessive drawdown of the permanent pool.” The wet basin design does not identify a source of basin replenishment to sustain the design level. Wet detention ponds rely on physical, biological, and chemical processes to remove pollutants from influent stormwater. A wet basin pond replenished only by rainfall will be subject to occasional drawdown from drought. An unstable wet basin will stress and reduce the vegetation, thereby impairing the effective stormwater treatment capacity of the facility. The lack of reliable base flow supply was also identified recently by the Township consultant, Cardno Environmental, during site visits on July 14 and 17, 2015, that documented low water levels in both Basins.

4. Submerged Inlet Pipes:

The Storm Water Control Ordinance, Section 2(E)(3)(d)(i)(1), Storm Water Facilities, Detention Systems, Controls, Inlet Design (at page 16), requires that “Inlet pipes shall not be fully submerged at normal pool elevations.” The two 48-inch inlet pipes at Basin #2 are both 4 feet below the permanent water level. Having submerged inlet pipes leads to maintenance problems and potential issues related to freezing, increasing the likelihood of overflows and other problems. The Township dismissed this requirement without showing the waiver criteria were met (*see* May 7, 2015, Technical Memo – Storm Water Review from R. Verschaeve, at page 2).

5. Undersized Emergency Overflow:

The Storm Water Control Ordinance, Section 2(E)(3)(d)(iii), Storm Water Facilities, Detention Systems, Controls, Emergency Overflow (at page 18), requires that the detention system must have a spillway “designed for the *100-year rainfall* event from the fully developed watershed.” The Township staff review memos do not include any analysis of the spillway volume capacity for each detention system. Our cursory calculations show the spillway is undersized for even a 10-year storm, let alone a 100-year storm. The Applicant should provide, and Township consultants should verify, that the spillways meet this Ordinance requirement.

Moreover, Section 2(E)(3)(d)(iii) requires that the emergency spillway shall have a “maximum flow depth of 1 foot” and that the “top of the berm elevation shall be a minimum of 1 foot above the design maximum water level.” This appears to require a minimum 2-foot berm. The stormwater plans indicate a 1.5-foot deep channel along the wetlands, less than the Ordinance minimum.

6. Wetland Swale Outlet Deficiencies:

The Storm Water Control Ordinance, Section 2(C)(3)(b), Grassed Waterways, Soil Erosion and Sedimentation Control (at page 6), requires that “grassed waterway flow velocities shall be neither siltative or erosive.” The DEQ BMP Manual for Riprap-Stabilized Outlet (at RO-2) provides that outlets “on slopes steeper than 10 percent

cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.” The BMP Manual (at RO 1 to RO 4) also provides that the apron should be twice the diameter of the outlet, with *no* slope along its length, and with *non*-woven geotextile fabric lines.

Contrary to the DEQ BMP Manual, the wetland swales from both Basins discharge at the top of slopes that appear greater than 10%. Moreover, the swale discharge from both Basins is likely to be at high volume and velocity due to channel size and design. Additionally, the rip-rap apron at the swale outlet for each Basin does not meet the DEQ BMP Manual, since the apron is the same diameter as the outlet, is sloped, and is lined with woven geotextile fabric.

In sum, the cumulative impact of the deficiencies outlined above is a flawed stormwater system that appears likely to fail. Given the history and conditions at this site, the Township must ensure the VGT stormwater system meets at least the minimum requirements in the Storm Water Control Ordinance and DEQ BMP Manual. We respectfully request that the Township reassess its approval of this system to address the violations identified above before the system becomes fully operational.

Both the Special Use Permit and the Site Plan Approval Permit for this project require that the Township and Applicant ensure compliance with the Ordinance and DEQ BMP Manual *prior* to system construction.³ Because information about the updated stormwater collection and treatment system was not publically available until after the Township approved it, we were not able to provide comments prior to approval. However, as Mr. Iacoangeli’s June 18, 2015, waiver letter demonstrates, the Township has the ability and authority to address technical violations first identified after system approval. The fact that you are receiving notice of these deficiencies after the system was approved and under construction does not relieve your continuing obligation to ensure a compliant system. Most importantly, not addressing these concerns and instead allowing a deficient stormwater system to operate at this sensitive site may prove devastating.

Please feel free to contact me about these and other matters of mutual interest.

Sincerely,



Christine Crissman
Executive Director

³ Section 5.12 of the Special Use Permit provides, “*Prior to or during* site plan approval, the Applicant must: (1) verify the use of Best Management Practices according to state and federal laws to minimize the impact of the approved Conceptual Plan on the environment, including Acme Creek.” Section 9(g) of the Site Plan Approval Permit provides that “Final engineered drawings, detailed wetland maintenance/monitoring plans, revised stormwater calculations, hydrograph/retention times for each phase and respective wetland basins shall be provided and approved by Acme Township staff *prior to construction* and/or issuance of the land use permits.”