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SANDUSKY GREEN SPRINGS ELEMENTARY
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GREEN SPRING



State of Ohio Environmental Protection Agency

Northwest District Office

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Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

Re: Sandusky County
Green Springs Elementary School
Storm Water Construction

December 22, 2009

Mr. Gregg Elchert, Superintendent
Clyde-Green Springs Exempted Villages School
106 South Main Street
Clyde, Ohio 43410

Dear Mr. Elchert:

On December 16, 2008, an Ohio EPA General Permit for storm water associated with construction activity (construction general permit, CGP) was issued for the Green Springs Elementary School, located at 420 N. Broadway Street, in the Village of Greens Springs, Sandusky County. In late June 2009, a phone call was received by this office from Mr. Rob Jurs, GGJ Engineers concerning the lack of adequate post construction controls at the Green Springs Elementary School construction site. An inspection in June 2009, by Danielle Meienburg of this office verified that an in ground detention vault along with a Vorsentry device was planned for installation for post construction controls.

Part III.B of the CGP requires that the Storm Water Pollution Prevention Plan (SWP3) shall be completed prior to the timely submittal of a Notice of Intent.

Part III.G.2.e of the CGP requires that the SWP3 contain a description of the post-construction controls that will be installed during construction for the site and the rationale for their selection. Further, this section of the CGP requires that the permittee request approval from Ohio EPA to use an alternative post construction best management practice (BMP), that is, a BMP that is not listed in Table 2 of the CGP. Ohio EPA maintains a list of Storm Water post-construction questions and answers on our website at: <http://www.epa.ohio.gov/dsw/storm/CGPPCQA.aspx>
This list expands upon statements in the CGP.

Question 11 is **Does Ohio EPA allow the use of alternative structural BMPs not listed** in Table 2 in Part III.G.2.e of the CGP? The answer to this question states:

"The CGP allows the use of alternative BMPs as long as they are of equivalent effectiveness to the BMPs listed in Table 2.

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To be of equivalent effectiveness, BMPs must be capable of meeting the intent of the post-construction requirements of the CGP, namely (a) prevent hydrologic impacts to the receiving water(s) and (b) minimize the discharge of pollutants contained in storm water runoff. Alternative BMPs should only be considered after the permittee has demonstrated to Ohio EPA that the BMPs listed in Table 2 are infeasible. To demonstrate that standard practices are infeasible, practical limitations related to physical site constraints or the inability to provide a functional design for the BMPs listed in Table 2 must be documented. Use of alternative BMPs because they allow for a more convenient design is not considered sufficient reason to determine that the BMPs listed in Table 2 are infeasible.

Most alternative BMPs are not suitable as stand-alone treatment because they either are not capable of meeting the water quality treatment performance criteria or have not yet received the thorough evaluation needed to demonstrate the capabilities of meeting the performance criteria. Other concerns regarding alternative practices include lack of field longevity or greater maintenance requirements. These practices have the potential to discharge highly concentrated pollutants if not properly maintained...."

In discussions and e-mails with Mr. Andrew Wright of the Buehrer Group, it has not been determined that the requirement that the alternative BMP chosen for the Green Springs Elementary School meets the effectiveness of the listed BMPs. Nor has it been proven that a standard practice BMP was infeasible, remembering that a more convenient design is not considered sufficient reason for infeasibility.

All post-construction BMPs must be able to treat storm water for both water quality standards and water quality volume. The information provided for the Vorsentry unit has not been proven to meet water quality standards in realistic field conditions including actual sediment particle size located at the Green Springs Elementary School site and realistic operation and maintenance practices.

The following are my comments from review of the detail plans that were submitted upon our request for the post construction BMPs that had been installed and the outlet structure proposed for the Green Springs Elementary School site.

1. Part III.G.1.d.of the CGP requires the calculation of runoff coefficients ("C") for both pre-construction and post construction site conditions. I cannot find the basis for the value of "C" in the rational equation.
2. Part III.G.1.h of the CGP requires the name and/or location of the receiving stream and/or surface water and subsequent named receiving water. I cannot find this listed.

3. It had been suggested that the inground detention structure was to be an infiltration structure. While infiltration is encouraged, these structures must be carefully constructed so that they will function properly. A principal threat to infiltration practices is sediment clogging. On page C8 of the SWP3 it is stated that the underground storm structure shall be flushed clean periodically during construction to remove sediment. The practice of allowing sediment to accumulate in this structure along with the use of heavy equipment during construction as well as installing this structure before the end of construction period negates the use of this structure for an infiltration practice. This BMP can only be considered an underground detention structure.
4. Post construction BMPs must consider the drainage area of the whole site as well as what comes from off site. The SWP3 states that the site is 8.79 acres. It was also given that there is an additional 0.45 acres that flows onto this site. Only 7.7 acres is acknowledged to go to the detention structure. Controls for the last acre are missing.
5. A submittal for a new storm outlet from the detention structure shows five 1" diameter orifice holes. While calculations were given for orifice sizing, justification for numbers (such as "C: above and why the estimated peak discharge rate of $2.25 \times Q$ avg is used rather than the average discharge rate) had not been given.
6. Underground detention systems have not been intended for water quality treatment as particulates can be resuspended during storm events. We have concerns that the orifice at the bottom of the outlet structure will allow sediment to be released with the first flush of the next storm.
7. Part III.G.2.g h. of the CGP requires that the SWP3 be designed to minimize maintenance requirements. The applicant shall provide a description of maintenance procedures needed to ensure the continued performance of control practices. When designing the water quality orifice it is important to minimize the likelihood of clogging, this includes orifices of less than two inches.
8. In order to meet the water quality requirements of the post construction portion of the CGP, it may be necessary to consider a pretreatment device for storm water, before the detention basin.

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If you have any questions, my direct line is 419-373-3016 and e-mail is patricia.tebbe@epa.state.oh.us.

Sincerely,



Patricia A. Tebbe, P.E.
Division of Surface Water

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pc: Andrew Wright, Buehrer Group, Architecture & Engineering, Inc
Robert Jurs, GGJ Consulting Engineers
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