

Wetlands and Storm Water Section Storm Water Program Office of Water Quality Indiana Department of Environmental Management	Authority: <i>This inspection was conducted pursuant to Indiana Code (IC) 13-14-2-2 and is consistent with the requirements of IC 13-14-5.</i>
Municipal Separate Storm Sewer System (MS4) Minimum Control Measure Audit: <ul style="list-style-type: none"> • Construction Site Run-off • Post-Construction Run-off 	Date of Audit: 11/22/17 Report Issued: 12/19/17 Audit Conducted By: Doug Wolf Report Prepared By: Doug Wolf

This audit report is a cumulative overview of the MS4 program for the construction site run-off and post-construction run-off minimum control measures. The report provides general background information, observations, recommendations, and requirements. The purpose of the audit is to identify program areas where an MS4 can improve program implementation, but to also identify deficiencies and/or violations that will require the MS4 to respond or address within specified timelines.

Section A: MS4 Program Information

MS4 Entity: City of Valparaiso	County: Porter
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MS4 Permit Number: INR040073	Permit Start and Expiration: 11/3/2013 to 11/2/18
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MS4 Operator: Jon Costas, Mayor

MS4 Coordinator/Representative: Mingyan Zhou

Audit Participants:
Mingyan Zhou, MS4 Coordinator; Adam McAlpine, Chief Deputy Engineer; Ken Corneil, Project Representative; Tim Burkman, City Engineer

Construction Certification Date: 12/22/2006
Post-Construction Certification Date: 12/22/2006

Projects Regulated by MS4:

All new projects are regulated upon the effective date of the construction site ordinance. The MS4 did not assume responsibility for projects that were active prior to passage of the local ordinance. These projects remain under the regulatory authority of IDEM.

Pre-ordinance projects that are incomplete and not terminated, are residential subdivisions with undeveloped lots where home construction activities are or will occur are covered by building permits that require erosion and sediment control.

All new and active projects within the MS4 area, including those where construction was initiated prior to the effective date of the construction site ordinance.

The MS4 is a non-traditional MS4 (University, Prison, College, etc.) and does not regulate projects within the MS4. All projects that occur within the MS4 are considered to be owned and operated by the MS4. The MS4 is responsible to obtain a permit in accordance with 327 IAC 15-5 and manage the construction site.

MS4 Boundaries for Program Administration of the Construction Minimum Control Measure:

County MS4: Urbanized Areas Only Entire County, Excluding Incorporated Areas
Clarification:

Municipality, City, Town: Urbanized Areas Only Other *The corporate limits of Valparaiso are subject to the MS4 construction site ordinance.*
Clarification: *Valparaiso University projects are subject to the requirements of the City of Valparaiso MS4.*

Outreach to the Regulated Community (Construction Site and Post-construction Run-off):
Typically an annual contractor’s workshop has been provided through a cooperative effort of Lake and Porter County MS4s and the Northwest Indiana Storm Water Advisory Group (NISWAG). Outreach is also accomplished on an individual basis through emails, phone calls, in-person meetings, process, website, informational, events (Earth Day etc.) site reviews and the permit application. Printed brochures, information sheets, and MS4 procedural information documents are available on the MS4 website. The brochure “A Homeowner's Guide To Erosion And Sediment Control” was developed for individual lot construction situations where the homeowner takes over building site responsibility for the final landscaping of the lot from

the builder. The “City of Valparaiso Erosion and Sediment Control Notes” describes the basic requirements for construction site compliance.

Section B: Overall Program Assessment - Construction Site Run-off

(S = Satisfactory, M = Marginal, U = Unsatisfactory, NE = Not Evaluated, NA = Not Applicable)

S M U NE NA

(B1) The construction site ordinance meets the intent of 327 IAC 15-5.

Comment: Based on the audit and a review of the MS4 program, the City of Valparaiso Unified Development Ordinance (UDO) appears to meet the intent of 327 IAC 15-5. Projects that disturb one (1) acre or more are required to develop and submit a comprehensive storm water pollution prevention plan. The ordinance requires permitting for projects that disturb less than one (1) acre but more than 3000 square feet and/or any land-disturbing activities for sites immediately adjacent to a storm sewer inlet, ditch, stream, wetland, other watercourse, and any sites which are located on ground with a slope of six percent or greater. Additional types of land-disturbing work are required to obtain a Site Permit/Erosion Control Permit for erosion and sediment control such as, excavations, fills, or earthmoving involving an earthwork quantity greater than 10 cubic yards; construction or installation of any sewer, pipe, swale, or ditch for drainage purposes.

Recommendations:

Requirements:

S M U NE NA

(B2) Requirements and standards have been developed and/or adopted for the implementation of measures associated with erosion, sedimentation, and other waste on construction sites.

Comment: The MS4 utilizes both City of Valparaiso Stormwater Technical Standard Manual and the Indiana Storm Water Quality Manual. The Stormwater Technical Standard Manual is available on the City of Valparaiso MS4 Program website.

Recommendations: Review, revise and update the Stormwater Technical Standard Manual. An outdated and out of print IDNR publication is referenced in Chapter 7 Section C for use as a control measure reference the “Indiana Handbook for Erosion Control in Developing Areas”, published by the Indiana Department of Natural Resources. Review and revise Appendix C Construction BMPs control measures. Revise the Dewatering Structure BMP CN-103 to include and preference the use of properly sized pump discharge filter bags as a control measure. This appendix could be a guidance reference for control measures that the MS4 has found to work well or preferred for use and could detail measures that are not yet described within the Indiana Storm Water Quality Manual.

Requirements:

S M U NE NA

(B3) Construction plans submitted for regulated projects are reviewed in accordance with the local MS4 ordinance.

Comment: Mingyan Zhou, MS4 Coordinator and Adam McAlpine, Chief Deputy Engineer review the plans for compliance with the storm water ordinance. Plans have been reviewed using the “Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (Form 1)” checklist. The completed review form is provided to the applicant to be used for the submission of the Notice of Intent. The plan review form, “Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (Form 1) did not identify that the review had been conducted for compliance with the City of Valparaiso MS4 storm water ordinance as the form only referenced 327 IAC 15-5 (Rule 5). After the audit a revised plan review form with a revision date of 11/28/17 was provided via email that identified that the review was being performed under the purview of the City of Valparaiso MS4 ordinance.

Recommendations: Based on a review of several plans that had been accepted by the MS4, it is clear that improvements are needed in the review process. The plans that were briefly examined were the Meijer Store, Mistwood Phase II Unit II, and Pepper Ridge. In general the SWPPP construction sequences were typically not adequate for the complexity of the project and did not have provisions to require implementation of adequate initial perimeter sediment control measures prior to the start of mass disturbance. The Pepper Ridge subdivision construction sequence had only six (6) steps; however this site has significant topography changes with a large wetland downslope of land disturbance. The construction sequence did not identify when the five (5) storm water basins (modified for use as temporary sediment basins) that were located around the perimeter of a large on-site wetland were to be installed. However, during the site visit the basins had been installed in a timely sequential manner due to project construction being delayed until sanitary sewer permits could be issued. An open ditch that carried off-site storm water basin outflow from an adjacent project was also not recognized in the sequence to be stabilized and protected from sediment discharge. Improved understanding and use of temporary sediment and run-off control implementation in conjunction with

construction sequencing will enhance plan review results. Plans do not detail incremental stabilization of project idle areas.

Requirements:

S M U NE NA
(B4) Construction projects are managed through a tracking system that includes name, address/location, duration, indication of compliance actions, and status (active NOI or equivalent and termination).

Comment: The MS4 has an extensive system using “Trakit” software for tracking of local permit, including permit number, project name, address/location, site owner/contractors' contact information, project status (under review, incomplete, approved, hold, closed, expired, stop work order, void), dates permit issued/released and project completion (project duration). Inspections, enforcement actions and complaints are also tracked using Trakit.

Projects are also identified on an ArcMap GIS system to easily see permitted project locations.

Recommendations:

Requirements:

S M U NE NA
(B5) The construction site run-off inspection program has established procedures and written policy for program implementation; including sites that are a priority for inspection.

Comment: The MS4 inspection process is outlined in the City of Valparaiso Erosion and Sediment Control Inspection Standard Operating Procedures (SOP) that is available on the MS4 website. The SOP identifies the inspection responsibilities and directs inspections based upon the Inspection Priority List factors. As other city inspections are conducted for building/construction codes, the city inspectors will alert the MS4 Coordinator of issues related to erosion and sedimentation. The MS4 is experiencing a heavy amount of new construction activity. The MS4 Coordinator, Mingyan Zhou, is the primary inspector for compliance with the construction run-off inspection program. Inspections are typically not documented on an inspection form. When concerns of erosion and sediment control are identified frequently these concerns are provided to the project management via phone calls, on-site meetings and email messages. An inspection form is not utilized due to a high inspection workload and lack of time to complete.

Recommendations: The MS4 could benefit from the regular use of an inspection form to help guide inspections and to document compliance issues/violations and sediment discharges to support enforcement actions.

Requirements:

S M U NE NA
(B6) Policy and procedures are implemented to enforce the construction site run-off program.

The MS4 utilizes Fines Stop work orders Penalties Permit suspension

Comment: City of Valparaiso Unified Development Ordinance (UDO) Sec. 17.200 details the enforcement process. The “Enforcement Action Sequence for Stormwater Management at Construction Projects” flow chart maps out the typical enforcement action process (the flow chart is available on the MS4 website). For minor deficiencies a “Notice of Erosion Control Violation” letter is issued with the Warning box checked with a required compliance action date. If compliance is not achieved, then a fine is levied. Additional fines can be levied if required action dates are not achieved or may escalate to a stop work order. If major deficiencies are identified, fines can be levied without issuance of a warning. Depending on the severity of the deficiency a stop work order can be placed on the project without issuance of a warning or levy of a fine. Developers that have had projects with repeated enforcement actions can face delays in approval for new projects until current projects are brought into compliance.

Recommendations:

Requirements:

S M U NE NA
(B7) MS4 personnel responsible for plan review, inspection, and enforcement of construction activities attend annual training.

Comment: Mingyan Zhou, MS4 Coordinator works to receive regular training throughout the year by attending programs, seminars, webinars, and reading publications. An example of training include LTAP Stormwater Drainage conference, Indiana MS4 Annual Meeting, NISWAG quarterly meetings, INAFSM Inspectors group meetings, webinars “Inspections of Construction Sites”, "Ground Control: Stormwater Pollution Prevention for Construction Sites" video, reads/reviews periodicals such as Stormwater magazine and Storm Water Solutions magazine, and book review of "Designing and Reviewing Effective Sediment and Erosion Control Plans" third edition. Other MS4 staff that are involved in plan review and construction code inspections have not actively obtained training relevant to construction site storm water pollution prevention to increase their participation in the MS4 storm water program. Several of these staff obtain training that is related to renewal of their Professional Engineers license.

Recommendations: The MS4 should review the annual training requirement and determine what additional staff members and departments would benefit the City's storm water program with additional training. Training for staff should focus on erosion and sediment control and storm water management. It was evident that increased coordination with building code inspectors, along with internal training of those inspectors would help expand and increase implementation of the construction site inspection program. The MS4 should continue to pursue training related to construction site run-off for engineering and inspection staff. While the minimum training requirement is annual, it is important that staff pursue or are given the opportunity to attend training to advance their skill level and increase their ability to perform their day to day job responsibilities at a high level of confidence.

Requirements:

S M U NE NA
(B8) The construction site run-off program is reviewed at least once every five (5) years.

Comment: It is evident that the MS4 regularly reviews the ordinance and supporting documents to implement its storm water program. The latest update of the ordinance was on 6/22/2015. In addition, program review has resulted in an information sheet titled "City of Valparaiso Erosion and Sediment Control Notes" 2/1/13, that was created for builders and explains the basic erosion and sediment control requirements at construction sites, a brochure titled "A Homeowner's Guide to Erosion & Sediment Control" (developed 3/13/15 and revised 9/17/17) for homeowners that take over the final lawn and landscaping responsibility from the builder.

Recommendations:

Requirements:

(B9) Overall performance in administering the construction site run-off minimum control measure.

Comment: It is evident that the MS4 is experiencing a significant increase in construction activity/growth that requires appropriate staffing resources to meet this increase in activity.

Recommendations: It is evident that additional inspection support and resources are required by the MS4 to adequately keep up with the current expanding level of construction activity and MS4 growth. A programmatic review is recommended to assess how the MS4 can better utilize current staffing and departments for inspection implementation and the availability of an additional resources to assist with the increase in construction activity. In addition, evaluate how current code enforcement staff and infrastructure inspectors could help conduct storm water pollution prevention inspections with their current responsibilities to increase MS4 inspection efforts and efficiency.

Requirements:

Section C: Overall Program Assessment - Post-construction Site Run-off

(S = Satisfactory, M = Marginal, U = Unsatisfactory, NE = Not Evaluated, NA = Not Applicable)

S M U NE NA
(C1) The post-construction ordinance addresses local resource issues and meets the intent of 327 IAC15-5.

Comment: Based on the audit and a review of the MS4 program, the City of Valparaiso Unified Development Ordinance appears to meet the intent of 327 IAC 15-5. The pollutant reduction goals of the ordinance and the Stormwater Technical Standard Manual has a basic goal of 80% TSS removal that is blended with requirements for water quality volume standards for detention-based control measures or the water quality discharge standards for flow through control measures. A single control measure may not be adequate to achieve the water quality goals for a project and for this reason a "treatment train" is often required for a project to achieve the required treatment goals.

Recommendations:

Requirements:

S M U NE NA
(C2) Requirements and standards have been developed and/or adopted for the implementation of measures associated with post-construction site run-off.

Comment: The MS4 utilizes both the City of Valparaiso Stormwater Technical Standard Manual and the Indiana Storm Water Quality Manual for implementation of storm water measures. The Stormwater Technical Standard Manual is available on the City of Valparaiso MS4 Program website.

Recommendations: It is recommended that the MS4 include the technical standards used to support selection and implementation of control measures in the required periodic program review process to ensure that the standards are current and to identify where revisions or additions are needed. The Stormwater Technical Standard Manual does not contain siting requirements or address limitations for use in sensitive areas such as wellhead protection areas. Examples of post-construction measures that should be considered for review include BMP PC-103 Cistern/Dry Well (Consider renaming since the term dry well has inference to Class V injection wells and the term dry well does not relate to a

cistern or rain barrel.) and BMP PC-105 (Underground detention figure PC-105B allows discharge to “dry well” [a Class V injection well?])

Requirements:

S M U NE NA
(C3) The MS4 directs physical growth away from sensitive areas and towards those that will not compromise water quality. The MS4 manages the selection of measures in wellhead protection areas, discharges to other sensitive resource areas, and where applicable sinkholes.

Comment: In general the MS4 ordinance does recognize the need for protection of sensitive areas and concerns for water quality impacts associated with development. UDO Article 4 “Site Capacity and Environmental Standards” establishes rules to promote and protect public health, safety and general welfare, including the protection of wellhead areas and resources (including streams, water courses/water bodies, wetlands, as well as woodlands, riparian buffer, floodplains and floodways etc.). UDO Division 7.600 “Development in Wetlands Regulations” basic policy recognizes the need to preserve wetland areas and identifies procedures to help protect and recognize wetland areas in the planning process. The MS4 is aware of and has identified wellhead protection areas within the MS4. The MS4 Coordinator is on the City’s Wellhead Protection Committee. The MS4 has not developed a selection process for measures that rely on infiltration when sited in wellhead protection areas. The newly revised plan review form, “Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (Form 1), dated 11/28/17 has a specific item, C8 related to siting infiltration practices within wellhead protection areas. C8 states “No infiltration practices within wellhead protection areas” therefore the review process does not allow infiltration practices within wellhead protection areas.

Recommendations:

Requirements:

S M U NE NA
(C4) New retail gasoline outlets and refueling areas that replace their existing fuel tank systems are required by ordinance or other means to design and install appropriate measures to reduce lead, copper, zinc and polyaromatic hydrocarbons in storm water run-off from the facility.

Comment: In general, the MS4 ordinance addresses this requirement. The MS4 typically requires implementation of hydrodynamic separators for all new gasoline outlets and refueling areas. UDO Article 7 Division 7.500 Sec. 7.502 C states "Gasoline outlets and refueling areas must install appropriate practices to reduce lead, copper, zinc, and hydrocarbons in stormwater run-off. These requirements will apply to all new facilities and existing facilities that replace their tanks." The newly revised plan review form, “Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (Form 1), dated 11/28/17 has a specific review item C7 identifying the requirement for control measures for projects that have pollutants associated with gasoline outlets and refueling areas.

Recommendations: It is recommended that the MS4 evaluate its permitting and plan review process for projects that disturb less than one (1) acre to ensure that gasoline outlets and refueling areas that replace their existing fuel tank systems be required to implement appropriate control measures. Ensure that there are adequate procedural review processes to require projects that replace their tanks, but disturb less than one (1) acre to install appropriate control measures. This item is being identified since Form 1 plan review is only used for comprehensive plan reviews and does not appear to be used to evaluate projects with less than 1 acre of land disturbance.

Requirements:

S M U NE NA
(C5) Post-construction plans submitted for regulated projects are reviewed in accordance with the local MS4 ordinance.

Comment: Mingyan Zhou, MS4 Coordinator and Adam McAlpine, Chief Deputy Engineer review the plans for compliance with the storm water ordinance. The post-construction plan component is reviewed concurrently with the construction plan component. Plans are reviewed using the “Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (Form 1)” checklist. The completed review form is provided to the applicant to be used for the submission of the Notice of Intent. The plan review form, “Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (Form 1) did not identify that the review had been conducted for compliance with the City of Valparaiso MS4 storm water ordinance as the form only referenced 327 IAC 15-5 (Rule 5). After the audit a revised plan review form with a revision date of 11/28/17 was provided via email that identified that the review was being performed under the purview of the City of Valparaiso MS4 ordinance. The revised form also has been expanded for post-construction to include #6 Achievement of stormwater quality management goal (80% TSS removal), #7 Design and install, and where appropriate, practices to reduce lead, copper, zinc and poly aromatic hydrocarbons in stormwater run-off and #8 No infiltration practices within wellhead protection areas.

Recommendations:

Requirements:

S M U NE NA
(C6) The MS4 requires the development and implementation of written operational and maintenance plans for all planned structural post-construction storm water management measures to ensure long-term functionality.

Comment: The MS4 ordinance and plan review process requires plans to contain maintenance guidelines for the control measures. UDO Article 15 Division 15.300 Sec 15.305 C7g requires project construction plans to contain post-construction operation and maintenance manuals/requirements for each control measure. The MS4 takes on the responsibility for maintenance of control measures that are within public right of ways such as those that are part of the roadway storm sewer systems. However storm water basins in residential subdivisions are under the responsibility of homeowners associations. Storm water measures that are on commercial developments are under the responsibility of the facility owner. The MS4 has all installed control measures logged into the GIS system for long-term identification and follow-up.

Recommendations:

Requirements:

S M U NE NA
(C7) The post-construction site run-off inspection program has established procedures for implementation, including a mechanism to enforce failure to maintain a post-construction measure.

Comment: UDO Article 7 Division 7.500 Sec. 7.505 describes the responsibility for maintenance of post-construction control measures and the MS4's authority to inspect approved control measures. This section also describes the enforcement process to correct identified control measure deficiencies. The Stormwater Technical Standard Manual does have inspection checklists for several post-construction control measures such as bioretention, constructed wetlands, infiltration trenches, infiltration basins, media filtration, filter strips, vegetated swales, and detention ponds. However the MS4 has not actively followed up on most of the approved control measures and does not currently have a program for regular inspection of installed measures.

Recommendations:

Requirements: The MS4 shall develop procedures and provision of inspection resources to ensure adequate operation of the control measures approved by the MS4.

S M U NE NA
(C8) MS4 personnel responsible for plan review, inspection, and enforcement of the post-construction program attend annual training.

Comment: Mingyan Zhou, MS4 Coordinator works to receive regular training throughout the year by attending programs, seminars, webinars, and reading publications. An example of training include LTAP Stormwater Drainage conference, Indiana MS4 Annual Meeting, NISWAG quarterly meetings, INAFSM Inspectors group meetings, webinars Post-Construction BMP and Commercial/Industrial Sites", and reads/reviews periodicals such as, the Stormwater magazine, and Storm Water Solutions magazine. Other MS4 staff that are involved in plan review and construction code inspections have not actively obtained training relevant to post-construction storm water pollution prevention to increase their participation in the MS4 storm water program. Several of these staff obtain training that is related to renewal of their Professional Engineers license.

Recommendations: The MS4 should review the annual training requirement and determine what additional staff members and departments would benefit the City's storm water program with additional training. Training for staff should focus on post-construction storm water pollution prevention and storm water management. It was evident that increased coordination with building code inspectors, along with internal training of those inspectors would help expand and increase implementation of the post-construction storm water pollution prevention inspection program. The MS4 should continue to pursue training related to post-construction run-off for engineering and inspection staff. While the minimum training requirement is annual, it is important that staff pursue or are given the opportunity to attend training to advance their skill level and increase their ability to perform their day to day job responsibilities at a high level of confidence.

Requirements:

S M U NE NA
(C9) The post-construction site run-off program is reviewed at least once every five (5) years.

Comment: It is evident that the MS4 regularly reviews the ordinance to implement its storm water program. The latest update of the ordinance was on 6/22/2015.

Recommendations: Review, revise and updating of the City of Valparaiso Stormwater Technical Standard Manual has been already identified in item C2.

Requirements:

(C10) Overall performance in administering the post-construction site run-off minimum control measure.

Comment:

Recommendations: It is recommended that the MS4 review and revise its operating procedures for post-construction for projects that it owns and/or operates to ensure that these projects are required to meet the pollution reduction goals that are required for projects the MS4 regulates.

Requirements:

Section D: Audit Summary

Action Items:

• **Recommendations:**

(1) The following items are recommended for modification: B2, B3, B5, B7, B9, C2, C4, C8, C9, and C10.

• **Required Actions:**

(1) The following item is required to be accomplished by April 1, 2018: C7.

Attachments:

Action by IDEM: Failure to address and/or respond to deficiencies and/or violations may result in further action by IDEM including, but not limited to a compliance meeting and/or a non-compliance letter. As warranted, IDEM will perform follow-up inspections for projects owned and operated by the MS4 as they are permitted and will periodically revisit sites regulated by the MS4.

Section E: Audit Information

Report Provided to:

• Insert primary recipient: **Mingyan Zhou, MS4 Coordinator**

Report distributed: Email Mail Via Certified Mail:

Questions and the submittal of documents in response to this report should be directed to:

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