

**CITY OF BOULDER  
WATER RESOURCES ADVISORY BOARD  
INFORMATION ITEM**

**MEETING DATE: December 14, 2015**

<b>AGENDA TITLE:</b> Update on Stormwater Collection System Permit and Regulation Changes
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<b>PRESENTER/S</b>
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**EXECUTIVE SUMMARY**

The purpose of this Information Item is to provide the Water Resources Advisory Board (WRAB) an update on current City of Boulder (city) Stormwater Quality Program initiatives and upcoming regulatory changes including updates to the city's state-issued Municipal Separate Storm Sewer System (MS4) Permit. This item does not require WRAB action and is intended to provide WRAB with background on the current program and additional upcoming work.

**BACKGROUND:**

The city's Stormwater and Flood Management Utility was established in 1973 just one year after the federal government enacted the Clean Water Act (CWA). The CWA set a framework for regulating the protection of water quality and the 1987 CWA amendments specifically regulated runoff from rain and snowmelt (stormwater) discharges. Though it would take several years, these CWA amendments created a pathway for state permitting of municipal stormwater discharges. As part of the city's 1989 Comprehensive Drainage Utility Master Plan, the city took proactive measures to address stormwater quality concerns by creating the city's Stormwater Quality Program.

In 1990, the CWA act began requiring large municipalities, or *Phase I* municipalities, with populations of greater than 100,000 to receive permit coverage for their stormwater discharges. Under the CWA's National Pollutant Discharge Elimination System (NPDES), MS4 permits are issued and enforced at the state level; in Colorado this is done by the Colorado Department of Public Health and Environment's Water Quality Control Division (Division).

Eventually smaller, *Phase II* municipalities like Boulder were required to acquire MS4 permits beginning in 2003. One year earlier, the city and other Boulder County MS4 permittees organized the Watershed Approach to Stream Health (WASH). The WASH program helped regional Phase II permittees meet MS4 requirements for, among other things, education and outreach. In 2006, the WASH program evolved into the Keep It Clean Partnership (KICP) that continues to be a collaborative partnership between the municipalities in Boulder County.

The City of Boulder is not only a KICP partner but is also contracted by KICP to manage and perform regional stormwater education and outreach activities. While valuable, this contracted work has required significant funding and staff time. Additionally, upcoming MS4 permit changes significantly shift the

focus from outreach to in-field oversight and enforcement. Staff has worked with KICP partners to reduce funding and staff time while maintaining the most valuable community programs. This will allow staff to focus resources on improved compliance efforts.

The Division has revised and reissued the city's MS4 permit twice since 2003 with the most recent permit taking effect in 2016. The 2016 permit is roughly three times longer than the current permit and contains many new compliance requirements that will rollout over the next few years. The Stormwater Quality Program is proactively working to prepare for and address new MS4 permit requirements that not only call for more prescriptive MS4 reporting but also require reporting for overlapping water quality regulations related to bacteria and nutrient loading.

### **ANALYSIS:**

State regulation of stormwater and water quality has consistently become more stringent and the longer and more prescriptive 2016 MS4 permit is no exception. Specific MS4 requirements and related water quality efforts that will require additional staff focus are detailed below.

### **MS4 Permit Requirements and Actions:**

In addition to the current MS4 permit annual reporting requirements, the 2016 MS4 permit places significant focus on recordkeeping and the development of a Public Description Document (PDD). The PDD must detail program action areas in keeping with the six critical focus areas or Minimum Control Measures (MCMs) of the MS4 permit. The details of each MCM follow:

- *MCM 1 & 2 – Public Involvement/Participation and Public Education and Outreach*  
Requires both community engagement efforts like organizing stream-team clean-ups and sending utility bill inserts. New requirements are prescriptive, but are not the focus of the permit (just 1 of 60 pages).
- *MCM 3 – Illicit Discharge Detection and Elimination (IDDE)*  
Requires the city to prevent pollutants from entering the storm sewer and local waterways. New written procedures for record keeping, tracking and business outreach are mandated.
- *MCM 4 – Construction Site Management*  
Requires specific erosion and sediment control measures on construction sites. New permit procedures have increased drastically including new recordkeeping and inspection requirements.
- *MCM 5 – Post-Construction Stormwater Management in New Development and Redevelopment*  
Requires developing properties to mitigate the effects of impervious area on stormwater through structures such as detention/infiltration ponds that reduce pollutant loading. New requirements have doubled for design standards, maintenance, written procedures and recordkeeping.
- *MCM 6 – Pollution Prevention/Good Housekeeping for Municipal Operations*  
Requires pollution reduction measures at city facilities that range from additional inspection and recordkeeping requirements to establishing secondary containment for the city's Magnesium Chloride tanks which store deicing chemicals for transportation winter weather operations. The latter will ultimately require new tanks and containment.

While more stringent requirements of the MS4 permit will rollout over the next 4 years, staff has already taken several measures to increase both near-term and long-term compliance. Specific actions include:

- Participating in Division MS4 permit stakeholder meetings.
- Incorporating the MS4 permit and water quality in the Stormwater Master Plan update.
- Restructuring to hire a new Stormwater Quality Engineer without requesting new budget.
- Reducing KICP funding in support of new compliance requirements.
- Hiring support staff to focus on illicit discharges, improving spill response time and reporting.
- Increasing enforcement response time for city-issued stormwater violations and follow-up.
- Improving city construction oversight and coordination with city inspectors on private sites.
- Identifying post construction maintenance needs and locating sites in GIS.
- Developing Stormwater Management Plans for city facilities.
- Partnering with Municipal Services Center (MSC) and engineering staff to address issues at city facilities.
- Surveying stormwater outfalls to Boulder Creek.
- Creating a draft PDD that will launch in early 2016.
- Coordinating with staff to provide training opportunities.

### **TMDL and Impaired Waters Listing**

The permit will also require the city to report on current work towards compliance with the city's *E. coli* Total Maximum Daily Load (TMDL). The TMDL for *E.coli* in section 2b of Boulder Creek extends from 13<sup>th</sup> Street to the confluence with South Boulder Creek. The primary objective of a TMDL is to define what level of pollutants can be discharged by permittees to meet instream water quality standards. The city's 2011 TMDL Implementation Plan (Implementation Plan) identifies potential steps the city can take to reduce *E.coli* loading to attain instream standards. Any efforts made will now need to be reported in the MS4 annual report.

While the Implementation Plan offers several suggested efforts that range from outreach to installing UV in pipes prior to discharging to Boulder Creek, staff suspects wildlife (e.g. raccoons) may be a significant contributor. In a pilot study where grates were installed on the storm sewer line (inlets and outfall); subsequent sampling determined that *E.coli* values had dropped substantially at the outfall. Staff is continuing to explore a range of potential actions that includes partnering with capital improvement project efforts. Partnering opportunities might involve adding additional storm drain inlet/outfall protection and using new pipelining related TV work to definitively eliminate cross-connection concerns. Staff are additionally sampling for optical brighteners that are commonly found in detergents to potentially identify illicit discharges to the storm sewer.

City staff has been actively engaged in dialogue with the state on new, 2016, impaired waters listings which will be finalized at the end of 2015. A draft list was issued in mid- 2015 and the final hearing for these listings will take place in December of 2015. The city commented on a few issues identified in the draft listing, and will continue to work with the Division to ensure accurate water body impairments are captured in the final list.

### **Nutrients, Regulation 85 and Periphyton**

The new MS4 permit speaks to reducing nutrient loading from various sources. This is in line with the Division's Nutrients Management Control Regulation (Regulation 85), which places into effect control regulations on the concentration of nutrients, nitrogen and phosphorus, that can be discharged to state waters from point and nonpoint sources. While regulation 85 focuses heavily on wastewater treatment facilities it also has stormwater requirements.

Regulation 85 requires cities to provide the state with instream and stormwater nutrient sampling data and a data gap analysis report which the city submitted in 2014. Nutrient education and outreach is also

required. In partnership with KICP, the city created a “Green is the New PiNK” campaign (symbolizing P-N-K or Phosphorus, Nitrogen and Potassium). This campaign targets residential sources of nutrient loading (e.g. lawns) which is the largest source of urban nutrient loading (next to agriculture) according to analysis provided to the Division by the Colorado Stormwater Council.

Nitrogen and phosphorus loading is of key concern because these nutrients, in excessive amounts, accelerate eutrophication of waterways resulting in algal blooms, reduced water transparency and possible fish kills. While monthly instream sampling for nutrients has been conducted since the 1980s, new proactive quarterly Periphyton sampling to determine background chlorophyll *a* (as measured by attached algae) was initiated in 2014. Sampling data collected for nitrogen, phosphorus and chlorophyll *a* will be used to determine the status of compliance for each compared to potential water quality criteria for Boulder Creek.

### **NEXT STEPS**

Continued planning is positioning the city to comply with the initial phases of the new MS4 permit and related TMDL and Regulation 85 stormwater requirements. Staff will continue to work with maintenance staff, construction project managers and engineering to address the more stringent compliance components that could require additional investments (e.g. new storage tanks with secondary containment at the MSC). As some of these components may require revisions to Boulder Revised Code, staff anticipates future coordination with WRAB. As staff continues to work on program development and enhancements, the following will be focus areas:

#### Staff Training and PDD Development

The PDD is the first compliance deadline of the new MS4 permit and staff is developing this document in a way that meets the intent of the permit but also allows it to be a training and outreach tool for staff and members of the public. Information in the PDD will be used to support planned 2016 stormwater training efforts for staff throughout the city.

#### Stormwater Compliance Specialist Position

Through the re-evaluation and restructuring of the city’s KICP commitment, newly available funds and FTE will be allocated to create a Stormwater Compliance Specialist position. This position will help advance MS4 permit compliance efforts around IDDE issues, construction oversight and enforcement.

#### Stormwater Master Plan Update

The release of the 2016 Stormwater Master Plan update will integrate city infrastructure needs with stormwater regulatory requirements and stormwater quality efforts. The update will be specifically be used to address various aspects of MS4 permit compliance by identifying program challenges, opportunities and recommendations.

#### Green Infrastructure Study

Green infrastructure (GI) features infiltrate, treat or otherwise mitigate stormwater by mimicking nature. Many GI features are used in development to mitigate the effects of added impervious surfaces and are required as part of the city’s post-construction oversight program. Unfortunately, there can be a perception with contractors that GI is always space intensive and too costly, but this is not necessarily the case. Additionally, GI has many co-benefits such as reducing heat island effect, adding habitat, etc. Staff has contracted with a consultant to evaluate the best GI applications for Colorado’s climate and city land uses and to help quantify the cross-benefits of GI to other city programs. This study will further be used to educate the Utility Rate Study by exploring options to incentivize customers to reduce runoff from their properties through reductions on their utility bill.

#### TMDL Implementation Planning

New MS4 related TMDL reporting requirements will require staff to evaluate whether the Implementation Plan needs to be updated. This review includes creating a matrix or “checklist” of outfall evaluation efforts which combines data such as new outfall screening results and cross-connection elimination efforts. This process will help staff target areas where new projects will likely be effective such as coupling optical brightener sampling (an indicator of human sources like detergents) with *E.coli* sampling or determining which high-flow outfalls would be good candidates for installing flow meters to help better characterize flow and therefore bacteria loading.