

Addendum: 4th Year Renewal Application information (Part 13.1.3)

- **Mapping MS4 Proposal:** Proposal to identify and map the remaining outfalls statewide. The proposal shall identify and prioritize all remaining unmapped areas and propose schedule for completing the mapping of these areas in phases within the next three 5-year permit terms.

An evaluation was conducted of ADOT's highway system for the purpose of developing a mapping prioritization process (State and US Route Mapping Plan, Wood Environment & Infrastructure Solutions Technical Memo, September 19, 2019). A total of 83 routes were assessed and prioritized based on the following parameters (refer to Attachment 1):

- *Age, length and daily traffic (AADT)*
- *Major communities served by route*
- *Annual precipitation*
- *Receiving waters: If any portion of the route is within ¼ mile of special waters (Outstanding Arizona Water, Not-Attaining, or Impaired), following parameters were also assessed:*
 - *Pollutants of impairment*
 - *Whether ADOT activities may generate any of these pollutants*
 - *Designated uses of receiving water*
 - *Total Maximum Daily Load (TMDL) and whether ADOT is named as a contributor or has been assigned a Waste Load Allocation (WLA) in the TMDL document*

The following recommendation was made to map the state highway system as follows over the next three 5-year permit terms:

- *First 5-year permit term: US 60, SR 77, SR 85, SR 260, US 95, SR 69, SR 87, SR 89*
 - *Second 5-year permit term: SR 82, US 191, SR 80, SR 83, SR 86, SR 89A, SR 188, US 70, US 89, US 180, SR 88, SR 92, SR 177, SR 179, SR 189, US 93*
 - *Third 5-year permit term: SR 64, SR 95, Loop 101, Loop 202, SR 51, SR 68, SR 73, SR 75, SR 90, SR 143, SR 264, SR 287, SR 288, US 89A, SR 61, SR 67, SR 71, SR 72, SR 74, SR 84, SR 273, SR 289, SR 373, US 160, SR 66, SR 79, SR 98, SR 169, SR 186, SR 187, SR 202S, SR 261, SR 277, Loop 303, SR 387, SR 389, SR 473, SR 24, SR 79B, SR 195, SR 210, SR 238, SR 286, SR 347, SR 366, SR 587, SR 989, US 163, SR 78, SR 96, SR 97, SR 266, SR 377, SR 386, US 64, SR 99, SR 180A, SR 181, SR 564.*
- **Receiving waters:** Identification of receiving waters that receive discharges from the MS4. Include a brief description of the designated uses of each receiving water and any known water quality impairments or TMDLs for those waters, or designation of any such water as an OAW.

A table identifying waters that receive discharges from ADOT's MS4 and associated designated uses, impairments, TMDLs or OAW designation is provided in Attachment 2. An evaluation of current and upcoming TMDL documents in which ADOT is either listed as a named or potential contributor of pollutants of concern or is assigned a WLA has also been conducted (TMDLs Review Summary, Wood Environment & Infrastructure Solutions Technical Memo, September 19, 2019).
- **Mapping:** An up-to-date map or map(s) showing MS4 boundaries locations where ADOT's MS4 discharges to receiving waters, locations where ADOT's MS4 discharges to an MS4 owned or operated by another party, and wet weather stormwater monitoring location(s) and the associated drainage basins.

Current maps of ADOT's MS4 by District are provided in Attachment 3. In addition, a detailed delineation of drainage basins for each of the wet-weather monitoring locations has been conducted (Drainage Basin Delineation Summary, Wood Environmental & Infrastructure Technical Memo, September 23, 2019).

- **Discharge characterization data:** Summary of stormwater quality monitoring data based on all sampling results obtained during the permit term. Provide an evaluation of the quality of stormwater discharges from the MS4, including a discussion on the detection and non-detection of specific pollutants. Include an assessment of any trends, improvements, or degradation of stormwater quality discharges from the MS4.

Monitoring data collected during the permit term demonstrate that stormwater discharges from the ADOT MS4 consistently met the majority of SWQS parameters for which sampling was conducted. Exceedances noted during the permit term are largely identified as isolated events, with the exception of E coli and lead, which were documented at multiple sites in multiple wet-weather monitoring seasons.

E. coli levels varied widely by season and location at all five MS4 sampling sites during the permit term. These levels have generally decreased at the ADOT monitoring sites (except Nogales) since 2016. However, there is not enough data to indicate a trend in statistical terms, and E. coli is difficult to forecast given its ability to persist in materials near and within stormwater conveyance systems between discharge events. The reductions may be attributed to ADOT's efforts to improve housekeeping and stormwater treatment maintenance to the extent possible in the catchment areas after exceedances were reported early in the permit term, as well as coordination with adjacent landowners and local municipalities on the drainage areas outside of ADOT's administrative control. ADOT will continue the pollution prevention and coordination efforts at all sampling sites to continue the trend with decreasing E. coli levels, and is planning research activities to characterize runoff that is generated solely from the highway system for further evaluation.

Lead concentrations have generally decreased and remained below SWQS at the ADOT monitoring sites (except Nogales) during the permit term. As with E. coli, not enough data is available to indicate a statistical trend. Lead concentration in runoff from highways is likely correlated to traffic congestion, since idling vehicles and the use of brakes are documented sources of lead and other metals emissions that may be deposited on highways. However, sources of lead emissions vary widely from one area to another, and airborne lead has been documented originating from ore and metals processing, aviation fuel, and naturally occurring lead within soils. Prevailing winds and local weather patterns can affect dispersion and ultimately the deposition of any airborne pollutant. This local variability may explain a portion of Nogales issues, given the lower air quality standards enforced on industries immediately south of the international border, as well as frequent traffic backups at the international border. Further research on the source of lead emissions and potential control measures to reduce lead concentrations in highway runoff is needed.

- **Updated SWMP:** A copy of the current updated SWMP.

Refer to Attachment 4 for the current updated SWMP. A summary of this year's updates to the SWMP is provided in the FY 2019 Annual Report, Part 5.

- **Proposed modifications to the monitoring program:** If changes are proposed to the stormwater monitoring program (such as changes to monitoring locations, parameters, or frequency), identify those and include a brief discussion on the reason (s) for modification.

ADOT proposes to relocate the current Flagstaff monitoring location in order to better characterize ADOT's contribution to local surface waters. The current monitoring location is near the intersection of Business I-40 and US 180 (Old Route 66 and Humphrey Street, Latitude: 35.198136, Longitude: -111.651522), adjacent to the Rio de Flag channel. The proposed location is approximately 2.2 miles south at the I-17/I-40 interchange (Latitude: 35.170885, Longitude: 111.664654).

The current Flagstaff monitoring location has proved problematic for collecting a sample that accurately characterizes ADOT activities and input to local surface waters. An evaluation was conducted to identify the issues at the current monitoring location and to investigate possible remedies or alternative sites (Evaluation of Flagstaff MS4 Monitoring Site, NV5 technical memorandum, October 29, 2018). The evaluation identified several issues, most significantly:

- ***Non-highway runoff sources in the catchment area.*** *The drainage area from which runoff is collected by the sampler contains sources of pollutants that are not representative of ADOT activities. In particular, the City of Flagstaff's Wheeler Park is located within the sampler catchment. The park is generally used by the public to exercise dogs and is a probable source of E. coli from pet wastes. Other sources of non-highway pollutants at the site include typical urban alleys, and associated dumpsters/trash, whose runoff flows to the sampler catchment area. The park and other areas that drain to the sampling site are outside of the administrative control of ADOT and are not related to ADOT's activities within its MS4.*
- ***Poor drainage near the monitoring location.*** *The Rio de Flag frequently becomes backed up into the stormwater outfall sampling point due to undersized conveyances, flat slopes, presence of debris and overgrown vegetation in the Rio de Flag channel. Negative flows (from the stream into the outfall) were recorded during approximately 36% of representative events. During these events, stormwater runoff samples at the site become contaminated with stream flow from Rio de Flag.*

These conditions have made the characterization of ADOT's contribution to local surface waters difficult at a minimum, and possibly inaccurate. Therefore, ADOT is proposing a new monitoring location adjacent to the I-17/I-40 interchange that has been chosen for the purpose of collecting stormwater runoff from the surrounding roadway surfaces and adjacent R/W. In contrast to the current site, the catchment area is comprised entirely of the ADOT highway system and adjacent landscaping, and does not have drainage concerns or the potential for back flow contamination at the outfall sampling point. The samples collected from the new location are expected to better represent stormwater discharge influenced by ADOT activities and management practices within the MS4.

Figure - Proposed Flagstaff wet-weather monitoring location



ADOT anticipates issuing a R/W Encroachment Permit by the first week of October 2019 to begin work at the new location for installation of the auto-sampler. Site preparation will consist of grading and installing an equipment pad and cabinet enclosure. Installation of new sampling equipment will then occur, and the auto-sampler's programming, calibrations, and testing will be conducted for ADOT's approval.

Once the new monitoring configuration is operational, ADOT will notify ADEQ in writing and annual wet-weather monitoring will commence at the new location. ADOT will adhere to current permit conditions and criteria applicable to the current Flagstaff sampling location, such as parameters, frequency, and applicable SWQS for comparison and determination of compliance. However, ADEQ is welcome to propose alternative conditions due the potential for a change in the designated receiving waters versus the current location. In this case, ADOT would expect ADEQ to contact ADOT to stipulate any new applicable SWQS, parameter changes or conditions for the sampling criteria at the new monitoring location.

ADOT will decommission the current monitoring location's equipment once sampling commences at the new location. The date of decommissioning will be noted in the 2019/2020 (year five) Annual Report. ADOT expects the new monitoring location to operational in mid to late November 2019, weather permitting.

- **Modifications to the SWMP:** Summary of changes made to the SWMP during the permit term, including any addition or replacement of control measures.

An evaluation of changes made to the SWMP during the permit term comparing the Statewide Stormwater Management Plan (March 2010), Stormwater Management Plan (September 2016), and the Stormwater Management Plan (February 2017) was conducted (SWMP Comparison, Wood Environment & Infrastructure Solutions Technical Memo, September 20, 2019). The 2010 SSWMP was in effect when the current permit term began in 2015. This document was created to comply with the requirements of AZS000018-2008 (2008 Permit), which covered all stormwater discharges associated with construction

sites, industrial facilities, and municipal separate storm sewer systems (MS4s) under ADOT's control. Conversely, the 2015 Permit covers stormwater discharges from only the MS4 and associated maintenance facilities. Consequently, there were significant changes made between the 2010 SSWMP and the 2016 SWMP in order to create a document that more closely aligned with the new 2015 Permit requirements. In addition, Both the 2008 and 2015 Permit require that ADOT "meet any applicable requirements of a final TMDL and the associated implementation plan, including any assigned wasteload allocation" and include this information in the SWMP (2008 Permit Section 7.3, 2015 Permit Section 2.2). However, no TMDLs in which ADOT was a named contributor were finalized prior to the issuance of the 2010 SSWMP, so that document did not address TMDLs or exceedances. The 2016 SWMP, on the other hand, included five TMDLs in which ADOT is a named contributor and discusses exceedances of water quality standards (WQS). Updates between the 2016 and 2017 SWMPs were relatively minor in comparison and consisted of updates to TMDLs, ADOT management and personnel, and minor updates in the text on legal authority, BMPs, mapping MS4, and IDDE program.

- **Proposed modifications to the SWMP:** If modifications to the SWMP are proposed for the next permit term, identify those and include a brief discussion on the reasons for the modification(s).

During the next permit term, ADOT plans to modify the SWMP to reflect the needs identified by the agency personnel who carry out the many stormwater-related compliance activities and reporting. In particular, control measures will be proposed requiring regular review and updates of the ADOT environmental training catalog, stormwater guidance documents, SOP updates, and web site content. Outreach activities will focus on education of agency personnel and providing them with the tools and technology needed to effectively coordinate stormwater-related activities across the state. In addition, ADOT will focus on improving and standardizing numerical metrics to provide meaningful feedback on permit activities.

- **Fiscal Analysis:** Brief description of the funding sources used to support MS4 SWMP expenditures.

The Federal Aid Highway Program is a primary source of funding for construction of ADOT projects. Most of the funding falls into several core programs, including the National Highway Performance Program (NHPP), Surface Transportation Program (STP), Highway Safety Improvement Program (HSIP) and Congestion Mitigation and Air Quality (CMAQ). State funding for ADOT comes from tax revenue and programs such as the Arizona Highway User Revenue Fund (HURF). The state of Arizona taxes motor fuels and collects a variety of fees and charges relating to the registration and operation of motor vehicles on the public highways of the state. These revenues are deposited in the HURF and are then distributed to the cities, towns and counties and to the State Highway Fund. These funds represent a primary source of revenues available to the state for highway construction, improvements and other related expenses.

- **Low Impact Development (LID):** Summary of the evaluation of the potential for incorporating and enhancing LID practices into ADOT's site planning and development process for new development and significant redevelopment projects.

As part of the Sustainable Transportation Program, ADOT has a goal to develop a sustainable stormwater program that reflects the MS4 program requirements in connection with the USGS Partnership and ongoing efforts in hydraulic engineering design upgrades. Achieving this goal would improve stormwater quality by controlling runoff from projects to minimize their effects on receiving waters and related water resources, and by using management methods and practices that reduce the impacts associated with development and redevelopment. The program aims to improve water quality by managing runoff and using technology

that mimics natural hydrology through the development of standard design approaches to incorporate low impact development (LID).

Many LID techniques that are becoming commonplace are more appropriate for buildings or on parcels instead of in roadways; however, there are strategies that can be implemented in highway systems. The Federal Highway Administration (FHWA), Environmental Protection Agency (EPA), the American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence, and the National Cooperative Highway Research Program (NCHRP) outline a variety of provisions incorporating LID measures into roadways.

Because ADOT's primary mission is transportation safety, LID implementation in ADOT's site planning and development program would be expected to occur over time at a small scale on highway projects, on facility/site renovations, and on local public agency projects administered by ADOT. LID treatments would be adopted when they fit seamlessly into the safety specifications that govern transportation project development, are cost-effective, and promote the goals of the agency or project. ADOT's Sustainable Transportation program has identified FHWA's INVEST Project Development PD-08 Stormwater Quality and Flow Control Criterion (<https://www.sustainablehighways.org/764/165/stormwater-quality-and-flow-control.html>) as a tool to guide implementation of LID practices within ADOT.

Attachments

- 1. Mapping MS4 route prioritization table*
- 2. Receiving waters summary table*
- 3. Current ADOT MS4 maps*
- 4. Current SWMP*