



CITY OF TEMPE

2018-2019

ANNUAL PHASE I MS4 REPORT

As Prescribed by AZPDES Permit No. AZS000005-2010 Appendix B

August 2019

*Prepared by the City of Tempe
Water Utilities Division
Environmental Services Section
Regulatory Compliance Group*

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1. General Information

A. Name of Permittee

City of Tempe

B. Permit Number

AZPDES Permit No. AZS000005-2010

C. Reporting Period

July 1, 2018 – June 30, 2019

D. Stormwater Management Program Contact

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E. Certifying Official

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2. Annual Report Certification

The Annual Report Form (ARF) must be signed and certified by either a principal executive officer or ranking elected official; or by a “duly authorized representative” of that person in accordance with Sections 9.2 and 9.12 of the Permit.

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Certifying Official

Date

3. Narrative Summary of Stormwater Management Program Activities Report

This section provides a status summary addressing stormwater management program activities required by AZPDES Permit No. AZS000005-2010 (Permit). Included is a brief description of program or activity implementation and progress or challenges, where applicable, in each area during the reporting year. If applicable, any significant developments or changes to the number or type of activities, frequency or schedule of activities, or the priorities or procedures for specific management practices are explained. This section includes language required by Appendix B of the Permit and additional information provided by Tempe.

A. Public Awareness Activities Including Outreach

Tempe Activities

Tempe has surpassed minimum Permit requirements outlined in Appendix A, Sections I.A and I.B, by coordinating and participating in many public and business sector awareness and outreach activities. During the 2018-2019 reporting year, Tempe reached nine target groups totalling approximately 534,295 people and/or businesses while covering a wide array of stormwater topics. The 45,731 increase in the number of people reached, above the 2017-2018 estimated reach of 488,564, is due to increased messaging in Tempe newsletters such as Tempe Today. In some cases, this number includes the same audience, though the stormwater message varies (e.g., Tempe resident messages through *Tempe Today* articles and Tempe businesses through *E-Bulletin* distribution, Tempe events STORM messaging and Tempe specific materials.). Table 1 summarizes events, topics, estimated numbers of people reached (where possible), numbers and types of materials distributed, and target groups. Examples of outreach materials, brochures, articles, and E-Bulletins are included as **Attachment A**.

Table 1: Summary of Public Awareness Activities and Outreach

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Industrial Facilities, Restaurants	All Year	Stormwater Information for Industrial, Commercial Facilities and Restaurants	382	BMP and FOG Brochures given during inspections	Industrial, Commercial Businesses, Restaurants
Social Media	All Year	Stormwater Pollution Prevention Videos (General, Pets, Pools, Lawns)	83	YouTube Video	General Public, Residents

Social Media	Jul-18	Pollution Prevention: Monsoon Stormwater Runoff	83	Facebook Post: Link to Tempe Program Webpages	General Public, Residents
Social Media	Jul-18	Stormwater Runoff Reduction: Rain Barrels	268	Facebook Post: Link to Tempe Program Webpages	General Public, Residents
Social Media	Jul-18	Stormwater Pollution Prevention: Only rain down the storm drain	150	Facebook Post: Pollution Prevention Tips	General Public, Residents
Neighborhood Outreach¹	Jul-18	Low Impact Development (LID)/ Green Infrastructure (GI) projects	216	Facebook Post: Link to Tempe Program Webpages	HOA and Residential Community
Tempe Today Article	Jul-18	Monsoon tips, Grease Cooperative Information	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	Aug-18	Stormwater Pollution Prevention: Pet Waste	310	Facebook Post: Link to Tempe Program Webpages	General Public, Residents
Tempe Today Article	Aug-18	Landscape Maintenance Classes	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Tempe Today Article	Sep-18	Prescription Take Back, Monsoon tips, Landscaping Tips	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
E-Bulletin (3Q2018)	Sep-18	Stormwater Annual Report and Illicit discharge reporting	210	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial

¹ Neighborhood outreach messages sent to 216 organizations (134 HOA's and 82 Neighborhood Associations)

Neighborhood Outreach¹	Oct-18	Stormwater Pollution Prevention: Winter Grass Seeding Tips	216	Facebook Post: Pollution Prevention Tips	HOA and Residential Community
Tempe Today Article	Oct-18	Household Products Collection Center: Zero Waste Event	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Neighborhood Outreach	Oct-18	Stormwater Pollution Prevention Tips: Pet waste, Pool Discharges, Leaves, Vehicles, Yard Maintenance	210	Best Management Practice Brochures	HOA and Residential Community
Tempe Today Article	Nov-18	Waste Management: Used Grease Recycling	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	Nov-18	Outreach Event, Stormwater Management Plan (SWMP)	587	Facebook Post: Event Announcement and Link to Tempe Program Webpages	General Public, Residents
Neighborhood Outreach¹	Nov-18	Outreach Event, Stormwater Management Plan (SWMP)	216	Facebook Post: Event Announcement and Link to Tempe Program Webpages	HOA and Residential Community
Tempe Arts Festival²	11/30/18-12/2/18	Stormwater Pollution Prevention, Stormwater Management Plan (SWMP)	635	Best Management Practice Brochures, Pet waste and Grease Collection bags, Cups, Pencils Notepads, Magnets	General Public, Residents, Downtown Visitors
Business Outreach via Local First²	Dec-18	Business Pollution Prevention and Storm Drains	75	Best Management Practice Brochures	Businesses

¹ Neighborhood outreach messages sent to 216 organizations (134 HOA's and 82 Neighborhood Associations)

² Tempe sponsored event included in the STORM Annual Report for Regional Outreach.

Tempe Today Article	Dec-18	Waste Management: Tree Recycling, Zero Waste Event	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
E-Bulletin (4Q2018)	Dec-18	Multi-Sector General Permit, Waters of the US, Reporting non-stormwater discharges, Best Management Practices	217	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Tempe Today Article	Jan-19	Waste Management: Bulk Trash, Used Paint	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Tempe Today Article	Feb-19	Household Products Collection Center: Zero Waste Event	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
HOA¹	Feb-19	Stormwater Pollution Prevention Tips: Home Repair, Yard & Garden, Pet Waste, Pools, FOG, Copper, Auto Repair, Rx Disposal	121	Best Management Practice Brochures & Pet waste bags.	HOA and Residential Community
AZ Water for People 5K⁵	Mar-19	Stormwater Pollution Prevention	150	Middle School Activity Book, Carabiners, Cups, Water bottles, Pencils, Grease Collection bags, Magnets.	General Public, Residents
Geeks Night Out¹	Mar-19	Stormwater Pollution Prevention - Impervious surface demonstration	410	Middle School Activity Book, Cups, Pencils, Magnets	General Public, Residents, Schools
Social Media	Mar-19	Outreach Event, Stormwater Management Plan (SWMP)	148	Facebook Post: Event Announcement and Link to Tempe Program Webpages	General Public, Residents

¹ Tempe sponsored event included in the STORM Annual Report for Regional Outreach.

Tempe Today Article	Mar-19	Zero Waste Household Products Collection, Irrigation Workshop, Bulk Trash, Prescription Take-back	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
E-Bulletin (1Q2018)	Mar-19	General Stormwater Information, ADEQ Rules Updates	260	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Tempe Arts Festival ¹	3/29/19 - 3/31/19	Stormwater Pollution Prevention, Stormwater Management Plan (SWMP)	770	Best Management Practice Brochures, Pet waste and Grease Collection bags, Cups, Pencils Notepads, Magnets	General Public, Residents, Downtown Visitors
Tempe Today Article	Apr-19	Waste Management, Adopt-A-Street, Path, or Alley, Landscape Water Conservation	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	Apr-19	Storm System Overview, How to Report Illegal Discharges	116	Facebook Post: Event Announcement and Link to Tempe Program Webpages	General Public, Residents
Tempe Today Article	May-19	Monsoon Preparation	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	May-19	Surface Water Pollution Prevention	116	Facebook Post	General Public, Residents

¹ Tempe sponsored event included in the STORM Annual Report for Regional Outreach.

Tempe Today Article	Jun-19	Monsoon Preparation, Stormwater Pollution Prevention, Waste Management	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Downtown / Tempe Business Outreach	Jun-19	Stormwater Awareness Material Specific to Downtown Tempe	86	Flyers Stormwater Awareness Near Tempe Town Lake	Commercial Businesses, Restaurants, Downtown Tempe Businesses
E-Bulletin (2Q2018)	Jun-19	Stormwater Control Measure Maintenance, ADEQ Updates	260	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Tempe Channel 11 Video Broadcast	All year est. 60/mo.	Stormwater Pollution Prevention Information (General, Pets, Pools Lawns)	26,161 ¹	Stormwater Pollution Prevention information via Videos	General Public, Residents
			534,295	Estimated annual total of people or businesses reached through 38 awareness and outreach activities	

Regional Activities

- Since the beginning of 2012, Tempe Environmental Services has coordinated and hosted quarterly Arizona Phase I MS4 Coalition Meetings. These meeting are an opportunity for Arizona Phase I municipalities to discuss program challenges, successes, innovations, and experiences. These meetings also allow for a more consistent understanding and implementation of the MS4 program statewide.
- The City of Tempe is an active member of Stormwater Outreach for Regional Municipalities, known as STORM. STORM is a regional organization promoting stormwater quality education within the greater Phoenix metropolitan area. STORM was founded in 2002 in response to regulations requiring municipalities to implement measures to educate the public on ways to protect the quality of stormwater runoff. Benefits for the region include increased public awareness of the impacts of stormwater pollution, shared experience and knowledge, pooled financial resources to address

¹ Tempe Channel 11 viewership numbers were not included in the total numbers reached since viewership could not be measured. Tempe Channel 11 has 26,191 subscribers, an unknown portion of whom were reached by the video.

concerns common to all communities, protected environments, and improved quality of life.

The purpose of STORM is to provide a platform for collaborative effort by which educational outreach may be provided to residents in the greater Phoenix area with the message of pollution prevention to keep our waters clean.

The STORM organization is composed of and benefits small, medium and large municipalities throughout the greater Phoenix metropolitan area. It has brought together the experience and resources of Phase I MS4s, including Phoenix, Mesa, Tempe, Glendale, Scottsdale and Arizona Department of Transportation (ADOT) with Phase II MS4s of Apache Junction, Avondale, Buckeye, Casa Grande, Chandler, El Mirage, Flood Control District of Maricopa County (FCDMC), Fountain Hills, Gilbert, Goodyear, Guadalupe, Litchfield Park, Luke Air Force Base, Maricopa County, Paradise Valley, Peoria, Pinal County, Queen Creek, and Surprise. A Tempe representative regularly attends the monthly STORM meetings. Tempe Chairs the STORM Board of Directors allowing the city to directly shape the future of this regional organization.

Key STORM accomplishments for fiscal year 2018-2019 include the following:

- Events – STORM members attended 64 events and made 20,300 direct contacts, an increase of 35% in direct contacts from FY18 (77 events with 13,000 direct contacts). The STORM organization attended three events (Odyssey Conservation Expo, Tres Rios Nature Festival, and Arizona Game and Fish Outdoor Expo) and hosted two construction seminar events this fiscal year. Additionally, members continue to attend events and use their STORM branded promotional items independently.
- Social Media -
 - AZSTORM Facebook page. STORM posted 234 times with a reach of 84,810. It is worthwhile to note that when Facebook posts were boosted, approximately 38,000 people were reached for a nominal fee of \$524. STORM maintains 1,727 Facebook Followers (an increase from 1,642) and Page Likes 1,714 (increase from 1,642).
 - Employed ABC15 creative advertising for campaign in English and Spanish, using banner ads on their website, Facebook ads, Facebook posts, and large banner ads, quizzes, high-impact units in addition to connected TV. The campaign resulted in increased audience engagement on social media by 5%.
- Website - Received a total of 10,021 webpage views by 7,726 users during 8,707 sessions. Webpage sessions increased by approximately 10% from FY18. A session is defined as a period of time a user is engaged in the website. Meaning, more people are actively using and searching the STORM website. Users, or individual visits increased when compared to FY18 by approximately 15%.
- Videos - Three educational videos were developed with information directed to home automotive maintenance, mobile carpet cleaners, and home painters. The

target audience information and best practices to manage pollutant discharges were presented by Sparky, a talking spokes dog. The videos, which were produced with STORM and member organization branding in broadcast and social media specific formats, can be found on STORM’s YouTube channel (https://www.youtube.com/channel/UC3pLhrbcSBB6A_EGc1B8rvA) and on member websites.

- Promotional Items – 20,000 promotional items (water flasks and key chains) with the STORM web address were distributed among the member communities.

The Fiscal Year 2019 STORM annual report is included as **Attachment B**. Tempe outreach events previously listed in Table 1 are included in the STORM report to account for distribution of STORM specific materials within the region.

B. Public Involvement Activities Including Outreach

“Adopt-A” and Other Volunteer Programs

Tempe implements various City “Adopt-A” (street, path, park) and other volunteer programs as components of the public involvement and participation portion of the city’s stormwater program. In addition to the aesthetic value of keeping roads and rights-of-way clean, the public and community service workers have helped Tempe to remove an estimated 851 bags of trash and debris that could have otherwise ended up in the MS4 system and/or subsequently a Water of the U.S. Information on Tempe’s “Adopt-A” programs can be found at the websites listed below.

- <http://www.tempe.gov/adopt>
- <https://www.tempe.gov/government/community-services/parks/adopt-a-park>

Table 2 summarizes the number of events that occurred during the 2018-2019 reporting year, number of participants, and amount of trash removed.

Table 2: Summary of “Adopt-A” and Volunteer Involvement and Participation

Adopt Events	Number of Events	Volunteers or Community Service Workers Involved	Bags of Trash Removed
Tempe Adopt-A-Path	14	45	57
<i>Tempe Adopt-A-Street</i>	24	135	212
<i>Tempe Adopt-A-Park</i>	56	397	582
Totals	94	577	851

Open Meeting Events

Tempe must, at least biannually, incorporate “open meeting events” into community activities or other public events. These open forums are used for public education, input, and feedback on the city’s stormwater management program and review of the Stormwater Management Plan (SWMP). Since many of Tempe’s stormwater awareness and outreach activities/events occur during community activities and/or public events and are hosted by city staff who are experienced with Tempe’s program, these venues are utilized as “open meeting events.” During the 2018-2019 reporting year, Tempe advertised and conducted two open meeting events at the Tempe Arts Festivals. See Table 1 for details.

Parks

Tempe’s Parks and Recreation continues to maintain approximately 70 “doggy bag” dispensers at various Tempe parks. This activity specifically involves the public in the reduction of pet waste that has a potential to reach the MS4.

Communication and Public Reporting

Tempe continues to provide the public with the opportunity to participate in the city’s stormwater program by providing avenues for the reporting of spills, discharges, or illicit dumping within the community. Tempe continues to operate its stormwater hotline and web-reporting for public reporting of illegal discharges to the city’s storm drain system. To consolidate city service information and contacts, Tempe utilizes a 311 system, which allows residents to call the 311 number, visit the 311 website and mobile Tempe311 app to report potential illicit discharges. A summary of public reporting can be found in Section 3.C of this report. Means of reporting are as follows:

- 480-350-2811 Stormwater Hotline
- 480-350-4311 City Hall Call Center
- <http://www.tempe.gov/311>
- <http://www.tempe.gov/stormwater>
- Tempe311 mobile app (iPhone and Android)

In addition, Tempe regularly disseminates the general Environmental Services Section stormwater webpage for purposes of allowing public discussion of stormwater issues and providing copies of stormwater material and the most current SWMP. The program information with contact information is located online at:

- <http://www.tempe.gov/stormwater>

Participation is encouraged during outreach events and public awareness activities, and contact information is provided with all outreach materials. See Section 3.A of this report for a detailed listing of outreach events.

Household Products Collection Center

Tempe continues to operate its Household Products Collection Center (HPCC), which opened in 1999. The HPCC provides Tempe residents with an outlet for disposing of and recycling potentially hazardous household products to prevent possible stormwater pollution. Materials commonly collected at the facility include e-waste, batteries, used motor oil, paint, antifreeze, pesticides, herbicides, and solvents. Materials are either recycled or disposed of in accordance with local, state, and federal regulations. Usable materials, such as paint, are processed, packaged, and made available to Tempe residents free of charge. Information on the HPCC, and on the proper handling and disposal of household waste, is available at:

- <http://www.tempe.gov/householdproducts>

In reporting year 2018-2019, HPCC advertised and hosted two special Zero Waste Events. The first event was in November 2018 the other was in April 2019. The events had 624 and 552 vehicles, respectively, pass through the center to dispose of household hazardous materials. These special events are included in the summary below.

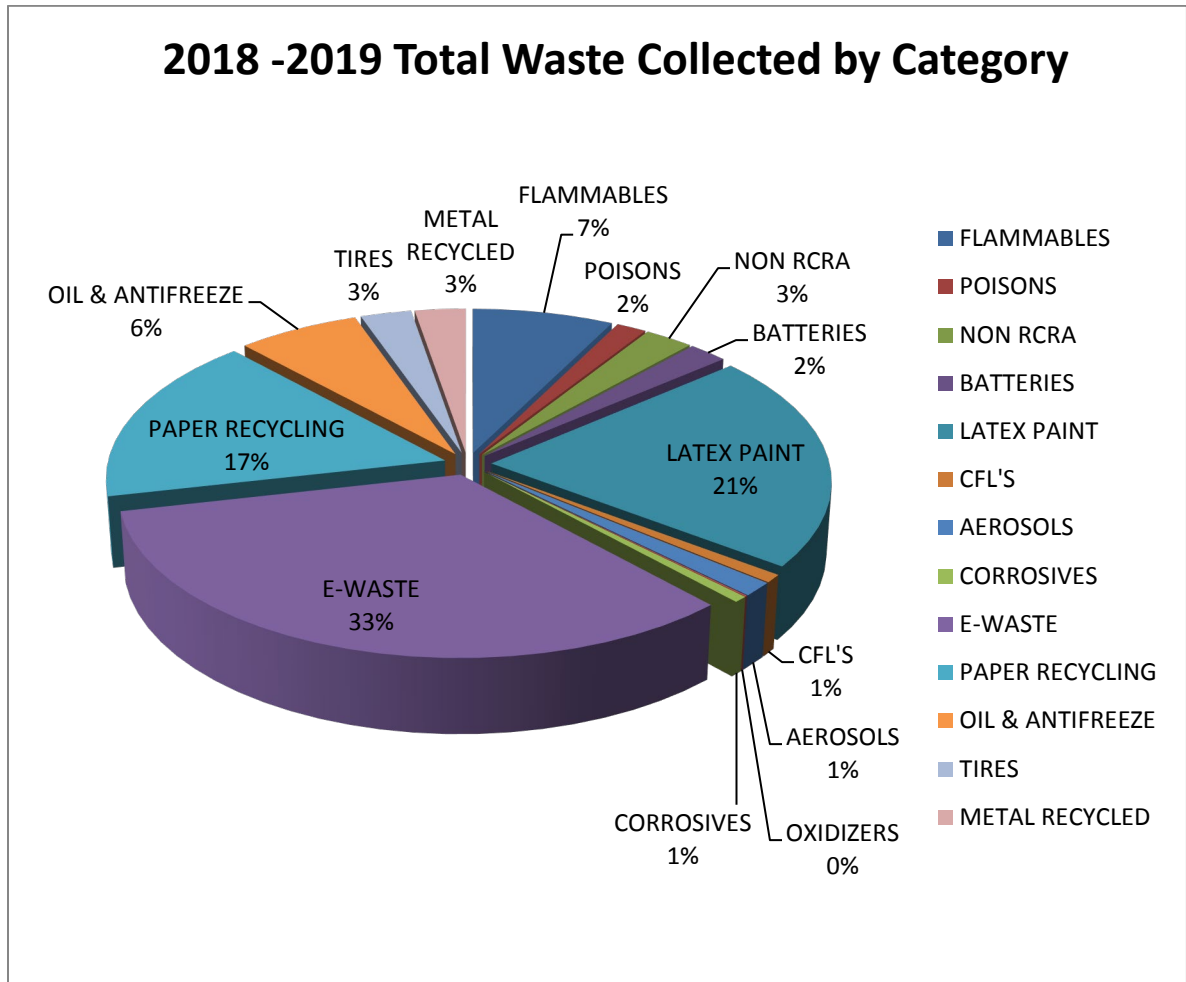
Table 3 summarizes HPCC events during the 2018-2019 reporting year.

Table 3: Summary of HPCC Activities

Number of Days Open to the Public	Number of People that Utilized HPCC Services	Amount of Household Hazardous Waste Collected
104	8,516	445,179 pounds

Below is a breakdown of all waste collected at the center.

Figure 1: HPCC Waste



Tempe Grease Cooperative

In 2014, Tempe launched the Tempe Grease Cooperative (TGC), an innovative voluntary partnership program, between the City of Tempe and its restaurants to better manage fats, oils and grease (FOG). In the program, Tempe brokers both pricing and service quality for grease trap and interceptor maintenance on behalf of community restaurants and food service establishments. Proper cleaning and maintenance of grease traps and interceptors helps prevent backups potentially reducing sanitary sewer overflows which could enter the MS4. The partnership is a gateway to open communications between businesses and Tempe’s Environmental Services Section and fosters compliance with several environmental programs including stormwater. Because of their potential to impact the MS4, restaurants are identified as a priority for commercial inspections. In this reporting year, 21 restaurants joined for a total of 217 members in the cooperative.

C. Illicit Discharge Detection and Elimination (IDDE) Program Activities

Tempe's Illicit Discharge Detection and Elimination (IDDE) program consists of several components designed to educate, involve, and solicit participation from City employees and the public, proactively prevent illicit discharges, and detect and eliminate illicit discharges. Below is a summary of these IDDE program components:

Training

During the 2018-2019 reporting year, Tempe maintained a staff of seven Environmental Compliance Inspectors (ECI), four Water Quality Specialists (WQS), two Environmental Compliance Supervisors (ECS), two Environmental Quality Specialist (EQS) and an Environmental Program Supervisor (EPS) with direct stormwater responsibilities. All inspectors are cross-trained in pretreatment, cross-connection control, and stormwater inspections. During the 2018-2019 reporting year, stormwater training for this group consisted of one hour long internal training event attended by eight staff members (five ECIs, one ECS, and two EQSs). Internal training focused on overall program management of a MS4, IDDE components, inspections, enforcement, housekeeping and spill prevention best management practices.

All of the WQSs and the second ECS did not receive training in 2018-2019 as their stormwater responsibilities for sampling and outfall inspections were reassigned to the ECI group in April 2019. The WQS group will receive training for field employees with no direct stormwater responsibilities in 2019-2020.

Of the 268¹ Tempe employees who received training during the 2018-2019 reporting year, approximately 260 non-Environmental Services field employees received site specific Municipal Facility training that included the identification and reporting of illicit and non-stormwater discharges. IDDE topics were discussed during these Municipal Facility training events, though are not specifically categorized as IDDE training for purposes of this report. See Section 3.K of this report for a summary of training events, number of employees trained, and topics discussed. See **Attachment C** for copies of training sign-in sheets.

These Tempe employees, many of whom work in the field, have been specifically trained to contact Tempe's Environmental Services Section in the event that a potentially illicit discharge is identified.

Outreach – Pollution Prevention

Tempe continues to implement a comprehensive outreach program that conveys a message of pollution prevention and encourages the reporting of illicit discharges or other potential sources of stormwater pollution. For details about this program, please see Sections 3.A and 3.B of this report.

¹ Number includes employees that may have attended more than one training event.

Infrastructure Inspection and Maintenance

One of Tempe's most proactive IDDE measures is the inspection and cleaning of municipal stormwater infrastructure. These activities are divided between four City workgroups: Environmental Services, Parks and Recreation, Streets, and Water Operations. Each section maintains responsibilities for various aspects of stormwater infrastructure inspection and cleaning. Note that infrastructure is not limited to catch basins, but includes all aspects of the MS4 such as catch basins, drywells, bubbler boxes, inlet structures, outfalls, streets, conveyance pipes, retention basins, etc. Outfall inspections are covered further in this section.

- Environmental Compliance Inspectors continue to conduct Alternative Retention Criteria Area (ARCA) catch basin inspections after large downtown events such as Tempe Festival of the Arts and 4th of July festivities. See Section 3.G of this report for a description of the ARCA. During the 2018-2019 reporting year, two ARCA area catch basin inspection events occurred. As a result, 67 catch basins were inspected, 4 of which required referral for cleaning, and these are included in Table 4 under Environmental Services ARCA infrastructure cleaned.

A numeric summary of infrastructure inspection and cleaning events can be found in Table 4 of this section. Inspection forms, narratives, and other inspection related information are included as **Attachment D**. A summary of cleaning events is included as **Attachment E**.

- Tempe's Parks and Recreation provides routine maintenance for various parks, retention areas, public common areas, public open areas, and recreational areas throughout the city. During routine visits to each of these facilities, cursory inspections are conducted of stormwater infrastructure. Detailed inspections are conducted annually. During the 2018-2019 reporting year, the Tempe Parks and Recreation inspected 295 stormwater assets including catch basins, inlet structures, drywells, bubbler boxes, and retention basins. Sixty-four of the 295 inspected stormwater assets were referred for cleaning 12 were referred for repairs. A numeric summary of inspections and cleaning events, and contracted services, can be found in Table 4. Inspection forms are included as **Attachment F**.
- Tempe's Street Maintenance Section is tasked with the maintenance and cleaning of Tempe streets including street sweeping and maintenance of right of ways. To reduce the amount of debris entering the MS4, Tempe continues to implement an effective street sweeping program using the following schedule (adherence to this schedule varies occasionally due to unforeseen events that require staff and/or equipment reprioritization):

- Arterial streets are swept once every two weeks.
- Residential, Collector, and Industrial streets are swept once every month.
- City-owned parking lots and large City facility schedules vary upon condition.
- Upon request (e.g., water main breaks, emergency road repairs, trackout, special events, etc.).

During the 2018-2019 reporting year, Tempe cleaned approximately 21,888 linear miles of streets effectively removing approximately 1,189 tons of debris. A numeric summary of these events can be found in Table 4.

In addition to street sweeping outlined above, Streets visually scans catch basins during sweeping and right of way maintenance operations. On an as needed basis, Streets staff will notify the Water Operations Section of MS4 maintenance and/or cleaning needs. These visual scans are not specifically documented beyond noting the location for cleaning/maintenance referral.

- Tempe's Water Utilities Division, Water Operations Section, currently operates one sanitary sewer closed-circuit television (CCTV) crew. As a component of the MS4 program, this crew is available to conduct underground infrastructure inspections for any of the above-listed Tempe work groups. During the 2018-2019 reporting year, Tempe inspected 4,075 feet (0.77 miles) of underground MS4 conveyance by CCTV. Inspection records are included as **Attachment G**. Areas of debris identified as a result of these inspections are referred for cleaning. Linear mileage cleaned, debris removed, and CCTV activities are summarized in Table 4. Upon approval by ADEQ, in February 2019, this CCTV inspections were replaced with additional catch basin inspections. The CCTV crew is available to conduct underground infrastructure inspections as needed.

Tempe's Water Utilities Division, Water Operations Section is also responsible for the operation and maintenance of Tempe's water, wastewater, and raw water irrigation and as of 2017-2018 stormwater infrastructure. Water Operations also maintains the contracts for any additional infrastructure cleaning services needed. During the 2018-2019 reporting year, Tempe inspected 507 structures, cleaned 533 structures, and 6.1 miles of underground MS4 conveyance.

Additionally, during inspections or cleaning events the crew assures that storm structures are properly labeled. The crew labeled or replaced worn labels on approximately 533 stormwater structures as part of the routine inspection.

Table 4: Summary of MS4 Infrastructure Inspections

Location/ Description	Infrastructure Inspected			Infrastructure Cleaned		Amount of Debris Removed
	Number	Repaired	Miles	Number	Miles	Tons
<i>Environmental Services - ARCA</i>	67			4*		
<i>Parks and Recreation Areas</i>	295	12		64		
<i>Streets (excluding street sweeping)</i>	-					
<i>Pipe (CCTV)</i>			0.77			
<i>Water Operations</i>	507			533	6.1	55.7
<i>Streets (including street sweeping)</i>	-				21,888	1,189
Totals	869	12	0.77	597	21,894	1,245

Note: Infrastructure includes catch basins, drywells, bubbler boxes, inlet structures, streets, conveyance pipes, etc. Referral for cleaning and repair numbers may not match the number of structures cleaned due to verification process and service schedule.

* Included in Water Operations infrastructure cleaned count.

Call-Outs

Tempe’s Stormwater Permit requires that the city respond to at least 90 percent of all reported illicit discharges and investigate at least 80 percent of potential illicit discharges reported by the public within three days of report. Of the 84 call-outs that Tempe’s Environmental Services Section received, 84 were either directly or indirectly related to stormwater concerns. All calls were responded to, one call was not investigated because an address was not given and caller did not respond message from inspectors. Note that some of the “call outs” were preventative inspections. A summary of all call-outs pertaining to these reports can be found in **Attachment H**. Table 5 summarizes the response and investigation percentages.

Table 5: Summary of Potential Illicit Discharge Reports

Reports (hotline, web form, other calls)	Reports Responded To	Percent Responded To	Reports Investigated	Percent Investigated
84	84	100	83	99

Inspections – Municipal, Industrial, Commercial, Outfall

Tempe's stormwater inspection program for municipal, industrial, and commercial facilities is a critical component of the IDDE program. Aside from identifying and eliminating discharges, these inspections compel the use of stormwater Best Management Practices (BMPs), bring awareness to stormwater pollution issues, and ultimately prevent the occurrence of illicit discharges that could impact the MS4 or receiving waters. These specific programs are further summarized in Sections 3.D and 3.E of this report. Tempe's outfall inspection program also serves as a vital component of this program. This program is further summarized in Section 3.H of this report.

IDDE Screening Program, Investigations, Identified Sources, and Corrective or Enforcement Actions

Tempe's IDDE screening program can be initiated by notifications from persons participating in any of the previously listed components (e.g., public notifications, field staff notifications, inspections, etc.). Tempe responds to all reported discharges, regardless of the source, to determine whether they are illicit discharges and initiates investigation of these discharges within three business days of detection or report. Discharges known to not be a significant source of pollutants or are otherwise exempt are not subject to further investigation. If a discharge is found to be illicit, corrective actions, including enforcement mechanisms, are used to eliminate the illicit discharge. Identified wastewater discharges, such as raw sewage or grease, are immediately investigated and eliminated as quickly as possible. Discharges found to not be a significant source of pollutants, exempt from CWA discharge provisions, or permitted under an ADEQ AZPDES permit are not necessarily investigated each time they are identified (e.g. irrigation water, tail-water, permitted De Minimis discharges).

If the source of an illicit discharge cannot be identified through physical investigations and field screening, grab samples will be collected at the outfall or field location where the prohibited discharge occurred and analyzed at a state certified lab. During the 2018-2019 reporting year, all discharges were investigated and/or identified through physical investigations and/or field screening or characterized through laboratory analysis.

Tempe Environmental Compliance Inspectors identified the following as a result of 43 outfall inspections, 141 industrial/commercial inspections, 241 restaurant inspections, and 84 call-outs:

- One illicit discharge to the MS4 resulted in the issuance of an official violation/warning letter to a commercial business. One call-out response resulted in referral to City of Tempe Criminal Investigation Bureau for prosecution of willful illegal disposal of fuel to Tempe's MS4. Enforcement documents are in **Attachment I**. Note that violations/warnings are issued in accordance with Tempe's Enforcement Response Plan (ERP) and points are assessed to the discharger. See **Attachment J** for the ERP details.

Table 6 summarizes the Environmental Services Section’s non-municipal inspections and findings.

Table 6: Environmental Services Non-Municipal Facility Inspection Summary

Inspection Type	Number of Inspections	Official Findings/Enforcement
<i>Outfalls</i>	43	
<i>Industrial/Commercial (non-restaurant)</i>	141	1 Violation/Warning letter for discharges or potential discharges of non-stormwater to the right of way or MS4 1 Referral to City of Tempe Criminal Investigation Bureau for criminal prosecution of illegal dumping
<i>Restaurant</i>	241	
<i>Call-Out (stormwater)</i>	55	
<i>Catch Basins and Other Infrastructure</i>	67	4 Infrastructure referred for cleaning
Total	547	

D. Municipal Facilities

Inventory

The total number of Municipal Facilities is 152. A list of facilities and a map of general facility locations is maintained and kept on file with Tempe’s Environmental Services Section and can be reviewed by ADEQ upon request. This inventory is subject to change based upon internal annual reviews.

All facilities were reviewed for potential reclassification to allow for a stronger emphasis on sediment control, storage practices, site activities, and general housekeeping. Ranking criteria was modified to accommodate this focus in 2012, but no changes were made in facility classifications because impacted facilities were already classified at a higher level. Table 7 summarizes the Municipal Facility inventory prioritization.

Table 7: Summary of Priority Municipal Facilities

Department/ Division	Priority #1 Facilities	Priority #2 Facilities	Priority #3 Facilities	Number of Facilities
<i>Municipal Utilities - Water</i>	3	13	21	37
<i>Fire</i>	1	8	1	10
<i>Community Services - Parks and Recreation</i>	5	5	55	65
<i>Community Services - Misc.</i>	0	5	11	16

Department/ Division	Priority #1 Facilities	Priority #2 Facilities	Priority #3 Facilities	Number of Facilities
<i>Transportation</i>	1	2	4	7
<i>Police</i>	0	4	1	5
<i>Municipal Utilities - Other</i>	2	0	0	2
<i>Miscellaneous</i>	0	2	8	10
Totals	12	38	99	152

All Priority #1 facilities are on a biennial (every other year) inspection schedule. Priority #2 facilities are inspected every three years and Priority #3 facilities are inspected every five years. New facilities and those with significant changes in purpose and/or inventory will be inspected as they come on line or change.

There were no additions or deletions of facilities during this reporting year.

Inspections

Consistent with Tempe’s Municipal Facility Stormwater Inspection Program, Tempe inspected and prioritized all 152 sites over the previous reporting years. In the 2018-2019 reporting year, 76 inspections were conducted at 72 facilities.

Table 8 summarizes all 2018-2019 inspection activities. Inspection reports can be found in **Attachment K**.

Table 8: Summary of Municipal Facility Inspections

Facility type/ inspection frequency	Number of Facilities	Number of Facilities Inspected	Number of Facility Inspections	Percent Inspected
<i>Priority 1</i>	12	11	13	92
<i>Priority 2</i>	39	9	10	24
<i>Priority 3</i>	101	52	53	51
Totals	152	72	76	47

Results

Results and/or activities and control measures implemented as a result of the 76 inspections conducted in the 2018-2019 reporting year are as follows:

- There were no significant findings and no follow up actions required, other than described below, for the 76 inspections conducted this reporting year.

- All inspected facilities storing a single container exceeding five gallons of a hazardous material post or maintain documentation of practices and procedures designed to prevent and respond to spills that have potential to come into contact with stormwater. See **Attachment L**. These practices are in addition to Tempe's Hazardous Waste Management Plan (HWMP), found in **Attachment M**, which requires the proper handling, storage, transport and disposal of hazardous wastes associated with municipal operations and facilities.
- During facility inspections, basic stormwater awareness and housekeeping practices are discussed with facility representatives. These discussions are separate and in addition to formalized stormwater training.
- Parks and Recreation completed upgrades to storm drainage for four facilities (Tempe Diablo Maintenance, Kiwanis Maintenance, Optimist, and Stroud Parks).

Chemical Handling, Storage, Disposal Practices, and Spills

Several Permit sections require various plans, documents, or procedures to ensure the proper handling, storage, and disposal of chemicals and effective response to chemical spills. Tempe's efforts in this area involve several city sections, all of which serve an important role related to the protection of human life and the environment. Below is a summary of activities performed by the various city sections.

- **Environmental Services**

Tempe's Environmental Services Section is responsible for all facility stormwater inspections required by the Permit. In part, the purpose of these inspections is to ensure proper housekeeping and the implementation of stormwater BMPs. During these inspections, facility chemical storage practices are reviewed from an environmental protection perspective. Facilities at which any single container exceeding five gallons of a hazardous material is stored are required to post or maintain documentation of practices and procedures designed to prevent and respond to spills that may come into contact with stormwater. This document was designed to provide a simple, easy-to-read message of proper chemical handling, storage, disposal, and spill response practices. It was developed by representatives from Environmental Services, Risk Management, and HPCC. This document is included as **Attachment L**.

There were no municipal facility spill incidents reported to the Environmental Services Section during the 2018-2019 reporting year.

Five municipal sanitary sewer overflows (SSO) occurred in the 2018-2019 reporting year. Notification of the event was reported to the appropriate regulatory agencies at the time of each occurrence.

- On July 3, 2018, a release of approximately 2,000 gallons occurred in the public right of way near the NE corner of Price & Don Carlos. Nearby stormwater infrastructure received trickle flow of less than one gallon from the release. The street and storm drain where the overflow was collected were disinfected with a bleach solution and a vactor truck was used to collect the waste for proper disposal. The SSO was determined to be caused by an unknown source of flushable wipes, sanitary paper, and grease in the sanitary sewer. Tempe will continue ongoing preventative maintenance, which has shown to be effective in the reduction of SSOs. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.
- On October 13, 2018, a release of about 500 gallons occurred in the public right of way near the SE corner of Elliot and Rural. None of the flow reached any storm structures or drains. The street where the overflow was collected was disinfected with a bleach solution and a vactor truck was used to collect the waste for proper disposal. The SSO was determined to be caused by a broken air relief valve in a temporary by-pass line going into the sanitary sewer. The reflux from the by-pass line was surging from the broken valve that made its way to the street. Tempe will continue ongoing preventative maintenance, which has shown to be effective in the reduction of SSOs. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.
- On February 16, 2019, a release of approximately 137,000 gallons occurred in the public right of way in the intersection of Darrow & Baseline. A contractor broke a 2" water line. The rushing water caused the collapse of a near-by sanitary sewer manhole. The sewer line back-up and over flowed to the street. The flooding street flow made it way to the storm system. A temporary by-pass was constructed until the line was repaired and services was restored. The street and storm drain where the overflow occurred were disinfected with a bleach solution and a vactor truck was used to collect the waste for proper disposal. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.
- On April 9, 2019, a release of approximately 46,000 gallons occurred in the public right of way alley, N of the 600 E block of Greenway Rd and the US60, plus a private storm retention basin E of the alley. The alley and storm retention basin where the overflow collected was disinfected with a bleach solution and a vactor truck was used to collect the waste for proper disposal. The SSO was determined to be caused by a root intrusion, debris and grease in the sanitary sewer. Tempe will continue ongoing preventative

maintenance, which has shown to be effective in the reduction of SSOs. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.

- On May 30, 2019, a release of less than 15 gallons occurred in the public right of way near 1511 N Project Drive. None of the flow reached any storm structures or drains. The street where the overflow was collected was disinfected with a bleach solution and a vactor truck was used to collect the waste for proper disposal. The SSO was determined to be caused by a wipe/rag blockage in the sanitary sewer. Tempe will continue ongoing preventative maintenance, which has shown to be effective in the reduction of SSOs. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.

Tempe's Environmental Services Section is also responsible for most city-wide MS4 stormwater training. This training includes proper chemical handling, storage, disposal, and spill response practices. See Section 3.K for a summary of training events.

- **Household Products Collection Center (HPCC)**

HPCC staff provides various levels of support for all aspects of chemical handling, storage, disposal, and spill response practices. The HPCC is a city-wide liaison for the acquisition of necessary spill prevention and response equipment and Tempe's in-house facility for the disposal of chemical wastes. The HPCC staff also maintains Tempe's Hazardous Waste Management Plan (HWMP). The HWMP was updated in 2011 to include practices to minimize exposure of hazardous waste to precipitation. The plan is reviewed annually. It was most recently updated in August 2017 by Tempe's Hazardous Waste Compliance Supervisor and reviewed by Environmental Quality Specialist (EQS) from Environmental Services. The Plan is included as **Attachment M**. In addition to these responsibilities, HPCC staff provides assistance with various municipal facility stormwater BMP needs.

- **Risk Management**

Risk Management provides support, guidance, and training in areas related to chemical handling, storage, and spill response. All city-wide safety programs are managed by this section and include the City of Tempe Hazard Communication Program, which was developed to inform employees of their "right to know" about all physical and health hazards associated with handling materials that contain hazardous substances. Typically, Risk Management works with staff to coordinate an eight-hour HazWoper training for WQSS and ECLs.

- **Fire Department**

The Tempe Fire Department provides emergency response services for incidents involving hazardous materials. Stormwater protection is a critical part of emergency response procedures and is included as part of the city's emergency response training. The Tempe Fire Department's Hazardous Materials Policy addresses containment of hazardous materials as a critical component of spill response procedures.

Pesticides, Herbicides, and Fertilizers

Tempe is committed to reducing the amount of pesticides and herbicides used by employing integrated pest management (IPM) practices. However, when pesticide and/or herbicide use is needed, established application BMPs are implemented. These practices were developed by Tempe-certified applicators and Tempe's Environmental Services Section in 2011 and updated in 2016; additionally, a multi-disciplinary, multi-departmental team has developed a formal Integrated Pest Management Program document. A copy of the updated MS4 Integrated Pest Management Plan is included as **Attachment N**. The plan is reviewed annually by a Parks and Recreation representative, who also serves as Tempe's IPM Program Coordinator.

- Tempe's Parks and Recreation applies fertilizer to city parks during the growing season using calibrated broadcast spreaders. Application rates are based on recommendations from the University of Arizona Cooperative Extension Turf Grass Research Facility. Soil and tissue analyses are periodically used to confirm or modify application rates. Currently, some parks and the city golf courses have the ability to inject liquid fertilizers through programmable irrigation controllers. When fertilizer is applied in this manner, it is done in small applications over several days to reduce or eliminate chemical run-off. In some turf areas, aerification methods are used which allow for better infiltration of water, fertilizers, chemicals, and soil amendments. In addition, all City of Tempe pesticide applicators are licensed through the Arizona Office of Pest Management and are required to complete Continuing Education Units (CEUs) every year, which include training on BMPs. As part of Tempe's IPM Program, certified applicators and supervisors are required to review the formal IPM Program document annually.
- Tempe maintains area-wide AZPDES Pesticide General Permit (PGP) coverage for the application of pesticides and herbicides to city-owned and operated urban lakes. Tempe does not conduct the actual application of pesticides to these water bodies; rather, applications are conducted by contracted pesticide applicators licensed through the Arizona Office of Pest Management. All contracted applicators are required to comply with PGP conditions and Tempe-specific BMPs.

Multi-Sector General Permit (MSGP) and other AZPDES Tracking

Two Tempe-owned and/or operated facilities (Priest Maintenance Yard and East Valley Bus Operations and Maintenance) currently maintain coverage under the Multi-Sector General Permit (MSGP), and two additional facilities (HPCC and Kyrene Waste Water Treatment Facility) maintain No Exposure Certifications (NECs). No other facilities to which the MSGP is applicable have been identified. Tempe identifies facility environmental regulatory requirements when operations at an existing facility change or new facilities are constructed. East Valley Bus Operations will apply for NEC in the 2019-2020 reporting period. Complete records for MSGP regulatory requirements are maintained onsite at each permitted facility. Reminders and compliance tracking of MSGP and other ADEQ and EPA requirements occurs electronically through a compliance management solution known as Intalex (<http://www.intalex.com/>).

Inventories and Mapping

Tempe’s Permit contains a series of inventory and mapping requirements with various completion dates ranging from the submittal of the first annual report to the fourth-year annual report. Table 9 summarizes Permit mapping requirements that have been met, the reporting year in which they were completed or updated, and the map title. These maps will be updated to reflect changes and Permit requirements as needed.

During 2017-2018 the Water Operations Section performed field verification of over 288 stormwater appurtenances at 39 parks. During 2018-2019, GIS inventory and maps were updated and aligned so the history of the assets maintenance can be recorded in the work order tracking database (Hansen). This effort will allow for work orders to be generated in Hansen and will ensure the correct maintenance is performed at the correct time on the correct structure. All maps are maintained in GIS and on file with Tempe’s Environmental Services Section and can be reviewed by ADEQ upon request. Note that all other inventories are addressed in their respective reporting sections.

Table 9: Summary of Mapping Status

Map Description	Reporting Year Map Completed or Updated	Map Name
<i>Identification and mapping of Waters of the U.S. (including Tempe area canals) that may receive discharges from the MS4</i>	2017	SWMP ATTACHMENT H Map 1: Tempe MS4 Surface Waters
<i>An up-to-date map or map(s) showing MS4 boundaries.</i>	2010-2011	All Maps
<i>An up-to-date map or map(s) showing locations where Tempe’s storm sewer discharges to Waters of the U.S.</i>	2017	SWMP ATTACHMENT H Map 2: Tempe MS4 Monitoring and Discharge Locations, Tempe MS4 Drainage System
<i>An up-to-date map or map(s) showing wet weather stormwater monitoring location(s) and the associated drainage basins. (Including acreage and land uses).</i>	2018	SWMP ATTACHMENT G: KP-01, SR-05, SR-08, TD-01, TD-03 Stormwater Monitoring Location Fact Sheets

Map Description	Reporting Year Map Completed or Updated	Map Name
<i>Map of all major outfalls and other field screening points.</i>	2017	SWMP ATTACHMENT H Map 3: Tempe MS4 Major Outfalls
<i>Map of facilities owned or operated by the MS4 that have the potential to discharge pollutants to Waters of the U.S.</i>	2017	SWMP ATTACHMENT H Map 4: Tempe MS4 Municipal Facilities
<i>An up-to-date drainage system map.</i>	2017	SWMP ATTACHMENT H Map 5: Tempe MS4 Drainage System
<i>Drainage Basins</i>	2013	SWMP ATTACHMENT H Map 6: Tempe MS4 Stormwater Basins
ARCA	2016	SWMP ATTACHMENT H Map 7: Tempe ARCA Map 2016

A summary of Tempe’s mapping capabilities and evaluation of future potential mapping requirements, as outlined in Appendix A, Section IV.E, were included in the 2013-2014 annual report.

E. Industrial Facilities

Status of Identification and Inventory of Industrial/Commercial Facilities

In 2018-2019 the City of Tempe Environmental Services Section updated the inventory of all industrial and commercial facilities within the city that are subject to inspection under Tempe’s MS4 Permit. This inventory was developed using the following Permit-required criteria:

- Industrial facilities identified in 40 CFR 122.26(b)(14)(xi)
- Industrial facilities subject to MSGP requirements, including those facilities that have submitted a no exposure certification 40 CFR 122.26(b)(14)(i-ix) except (iii); and
- Facilities subject to 313 Title III Superfund Amendments and Reauthorization Act (SARA)
- Other industrial and/or commercial sources (or categories of sources) Tempe determines are contributing a substantial pollutant load to the MS4. These include automotive facilities for auto body (SIC 7532), auto repair (including dealership service) (SIC 5511, 753-7, -8, -9) and car washes (SIC 7542).

The inventory list was developed by acquiring information from InfoGroup, Government Division – ReferenceUSAGov Data Base see the prioritized list of 1,572 facilities in **Attachment O**.

Other sources used by the city to identify industrial and/or commercial sources (or categories of sources) that may be contributing a substantial pollutant loading to the MS4 are:

- Utility billing records
- Arizona State Emergency Response Commission – (facilities subject to SARA Title III)
- EPA Enforcement and Compliance Online (ECHO)
- Multi-media inspections conducted by Environmental Compliance Inspectors
- ADEQ lists of facilities in Tempe with MSGP or No Exposure Certifications (NEC)
- Internet research based on visual field observation

The inventory of SARA Title III and MSGP facilities is duplicative in many respects and is inclusive of facilities within Tempe that are subject to industrial pretreatment permitting requirements. Industrial pretreatment facilities are prioritized for annual stormwater inspections. In addition to the above-listed facilities, Tempe has added restaurants as a “category of sources” with a potential to impact the MS4. Accordingly, all inspected restaurants are evaluated for stormwater compliance. A separate inventory list for restaurants is maintained by the Fats Oils and Grease (FOG) program.

The list will be reviewed annually to include businesses with Standard Industrial Codes (SIC) that have been noted, during the term of the permit, to demonstrate a potential to contribute pollution to the MS4.

Overview of Inspection Findings and Significant Findings

Tempe ECIs conducted stormwater inspections at 141 industrial/commercial facilities subject to SARA Title III, MSGP, and Industrial Pretreatment requirements; and 241 restaurants. Restaurants were inspected for compliance with stormwater requirements along with other regulatory program requirements. As a result of these inspections, findings ranged from minor to significant. Minor findings, such as inadequate use or lack of BMPs, or inadequate material/chemical storage, did not result in enforcement escalation and were quickly addressed by the inspected entity. One significant finding as the result of drive-by inspections or call-outs resulted in a corrective and enforcement action. Industrial/commercial inspection documentation and restaurant inspection documentation are included as **Attachment P** and **Q**, respectively.

Corrective and Enforcement Actions Needed and Taken in Response to Inspections

During inspections, Tempe inspectors routinely identify minor corrective needs that do not escalate to formal enforcement action. These corrections are usually addressed during or shortly after the inspections occur and are verified by the inspector. These findings are generally documented on inspection forms or addressed verbally.

As mentioned in Section 3.C. there were two findings requiring formal enforcement related to illicit discharges to the MS4. Enforcement action was taken on two businesses; a restaurant and a delivery company for non-stormwater discharges into the MS4. See **Attachment I** for notice of violation letter for the restaurant and memo to City of Tempe Criminal Investigation Bureau.

In addition to addressing minor and major deficiencies, Tempe inspectors regularly provide information to facilities whom may require coverage with ADEQ. During the 2018-2019 inspection year, Tempe identified 60 facilities to which the MSGP may be applicable but for which a demonstration of coverage was not provided. Tempe provided ADEQ with information for these potential non-filers on January 8, 2019, and July 8, 2019. See **Attachment R** for copies of non-filer notifications.

F. Construction Program Activities

Status

Tempe's stormwater construction program is managed by the Engineering & Transportation/Engineering and Community Development/Development Services Divisions. The program encompasses plan review, inventory, prioritization, inspection, and enforcement of Capital Improvement Project (CIP) and private construction projects that will result in a land disturbance of one acre or more, and those that disturb less than one acre but are part of a larger common plan of development. For the 2018-2019 reporting year, Tempe has reviewed grading plans and inventoried 100 percent of all twenty-four (24) new construction projects meeting the land disturbance criteria; these were added to the existing inventories. Of the were projects requiring review, inventory, prioritization, and inspection in Tempe two were (2) CIP and twenty-two (22) were private development projects. The CIP group currently maintains an inventory of five (5) construction sites; four (4) active construction sites and one (1) site pending final inspection. Development Services maintains an inventory of sixty-two (62) construction sites; thirty-three (33) active construction sites and twenty-nine (29) finalized sites, four (4) of which are pending final inspection.

Inspection Findings

Stormwater BMPs are checked as a part of other inspections on active construction sites. During the 2018-2019 reporting year, twenty-seven (27) active construction site stormwater inspections occurred. The Engineering group inspected six (6) active CIP projects at five (5) locations in the reporting year. Development services conducted twenty-one (21) inspections at active qualifying private development construction sites in the reporting period.

Post-construction inspection is part of the final inspection completed within the twelve-month warranty period. A total of twenty-eight (28) post construction site inspections occurred this reporting period. Engineering conducted three (3) CIP project post construction inspections. As was mentioned in the 2017-2018 annual report, CIP Project #3205851 for Water Storage Tank Rehabilitation at Hayden Butte is included in this count. Development services conducted twenty-five (25) inspections at finalized private development construction sites.

Each active site will have at least one annual inspection during the next reporting period and post construction controls will be inspected within twelve months of project completion per permit requirements. All inspection reports are included as **Attachment S**.

Note that the number of inspected sites does not necessarily reflect the number of sites inventoried or prioritized since the annual inspection requirement is a “rolling” target based upon the project’s grading and drainage permit issuance.

Corrective Action and Enforcement

One private development site was written a correction notice for lacking stormwater controls during this reporting period. The site is pending reinspection.

No non-filers were identified. Tempe’s Engineering and Development Services Divisions require proof of ADEQ’s AZPDES Construction General Permit (CGP) Notice of Intent (NOI) Authorization from the project’s owner or developer prior to issuance of a grading and drainage permit and, therefore, Tempe does not anticipate the identification of CGP non-filers.

Training

Stormwater training for twenty-three (23) employees directly involved with construction activities occurred on April 2, 2019. New employees will be trained within their first twelve months of employment and refresher training for employees with construction site responsibilities will be conducted at least every two years. See Section 3.K of this report for a summary of training events, the number of employees trained, and topics discussed.

G. Post-Construction Controls

Summary of Controls

Consistent with EPA’s Low Impact Development (LID) recommendations and urban stormwater BMPs, Tempe’s most effective post-construction control remains on-site retention as implemented by Tempe’s Stormwater Retention Ordinance - Chapter 12, Article IV, of the Tempe City Code; see **Attachment T**. This ordinance is an effective control

measure by providing containment for approximately 50 percent of the rainfall in Tempe, and consequently limiting discharges of pollutants to Waters of the United States. Tempe's Stormwater Retention Ordinance has been in effect since 1967 and has undergone modifications to accommodate denser development in and around downtown Tempe and the Rio Salado corridor, an area designated as the Alternative Retention Criteria Area (ARCA). Outside the ARCA, all new development or substantial improvements to existing developments that may impact Tempe's MS4 must provide storage of sufficient volume (i.e., on-site retention) to hold the runoff from the 100-year design storm. Inside the ARCA, new development or substantial improvements to existing developments must provide on-site retention for the two-year design storm. The two-year requirement may be waived within the ARCA subject to approval by the City of Tempe Engineering and Transportation Director if equivalent BMPs for on-site pollutant removal are implemented.

Overview of Program

Post-construction inspections are conducted on 100 percent of all permitted residential, commercial, and CIP projects that result in a land disturbance of one acre or more, and those that disturb less than one acre but are part of a larger common plan of development. These post-construction inspections are part of the warranty period inspections and occur within twelve months after completion of construction. The inspections provide an opportunity to identify corrective actions to be implemented by the developer or responsible contractor for a variety of items, including stormwater and/or drainage controls. Stormwater control measures can utilize one feature or a combination of several features. These control measures will be examined during post-construction site inspections for which an ADEQ Construction General Permit (CGP) Notice of Intent (NOI) is required.

Corrective Action and Enforcement

See section 3.F. for a summary of post construction inspection activities. No corrective or enforcement actions were needed or taken during this reporting period for post construction activities. Post-construction inspection documents are included as **Attachment S**.

New or Revised Post-Construction Requirements

Since Tempe's last annual report, there have been no new or revised post-construction requirements related to city-issued permits. Tempe will not issue a grading permit, building permit, or a certificate of occupancy to an owner/developer until notification from the City Engineer is received indicating that a drainage plan and on-site grading and drainage improvements are in compliance with Chapter 12, Article IV of the Tempe City Code. In addition, the City Engineer will not issue this notification unless a project provides the required retention or unless the project is in the ARCA and the Engineering and Transportation Director has approved alternative on-site pollutant removal BMPs. Sections 12-71 and 12-73 of Tempe's on-site retention ordinance contains the administrative

requirements that ensure implementation of this program. The ordinance provides some flexibility to developments outside the ARCA that discharge directly to Waters of the U.S., as long as: drainage does not enter the MS4, BMPs for pollutant removal are included in the design, and stormwater is discharged consistent with AZPDES and all other regulatory requirements.

H. Outfall Inspection Program

Staff training

Tempe reviewed and updated the IDDE Program Guidance Manual this reporting year to provide clarity to procedures involved during outfall inspections and investigations. During the 2018-2019 reporting year, Tempe conducted one detailed IDDE training event that covered conducting dry weather screening events and source investigations. A total of five ECIs and one ECS were trained.

Outfall inventory

Tempe has identified 42 major outfalls as defined by 40 CFR 122.26. A map and inventory of outfalls is maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request. The number of major outfalls is subject to change based upon system changes or the identification of previously unidentified outfalls.

The priority designation is based upon receiving water, history of illicit discharges or non-stormwater flow over the last five years, or any cause for prioritization identified by the city. The number of priority outfalls is subject to change based upon regulatory determinations in receiving water designation, detection of illicit discharges that have not been eliminated, elimination of illicit discharges, confirmation that non-stormwater flows do not contain a significant source of pollutants, or other factors. After evaluation of criterion, nine (9) sites remain identified as priority outfalls.

Inspection Tracking System

All major outfalls are inspected annually. If illicit discharges are identified, inspection frequencies may be increased to quarterly. Beginning in the 2018-2019 reporting year, ECIs resumed the responsibility from the WQs for dry weather outfall screenings at the required frequencies. If field screening procedures trigger the need for investigation, an ECI will conduct an inspection or make a source determination and follow-up as needed. Once screenings and inspections are completed, field data forms and investigation forms are provided to the ECS for review, after which all forms are provided to an EQS for MS4 Permit tracking and reporting.

Inspection and Screening Procedures

Outfall inspections are conducted using standard field screening procedures and are typically completed when rainfall, temperature, and moisture are lowest, but may be conducted at any time in dry weather conditions as long as the inspection occurs at least 72 hours after the latest rain event. There were no changes in the detailed protocol for Outfall Inspection, Field Screening or Illicit Discharge Elimination procedures this year. A summary of the procedures for Inspections, Investigations, and Illicit Discharge Elimination can be found in the Storm Water Management Plan Section 6.3, Section 6.4 and Section 6.5 respectively, see **Attachment CC**.

Findings

During the 2018-2019 reporting year, Tempe's WQs conducted 43 outfall inspections. Of these, 10 inspections were completed at priority outfalls and 33 were routine major outfall inspections. Two sites, SR-18 and SR-19 had dry weather flow that had previously been identified as SRP canal water. At nine of the inspections sites there was moisture identified without the presence of flow for field screening. Three of the nine wet without flow sites have had discharge sources identified as either irrigation tail water or irrigation flow. They are not significant sources of pollutants. The remaining sites will continue to be monitored annually and will be field screened according to the procedures outlined in the stormwater management plan if flow is detected.

The outfall inspection reports are included in **Attachment U**.

I. New or Revised Ordinances, Rules, or Policies

Revised Ordinances

There were no new rules developed. Revisions were made to existing stormwater Code during the 2018-2019 reporting year to reflect changes in organizational structure.

Copies of Chapter 12, Articles IV and VI; and Chapter 19, Article IV, 50) B) of the Tempe City Code can be found in **Attachment T**.

Policies and Stormwater Management Plan (SWMP)

Tempe has not developed new or revised existing policy. The SWMP was updated in 2019 to reflect role changes in the organization and document ADEQ approved control measure updates. The SWMP can be found in **Attachment CC**.

City of Tempe General Plan

The General Plan is the overarching planning document for the City of Tempe. It holds the community's vision for the future and reflects how the community wants to grow and change over the next 30 years. During the 2012-2013 fiscal year, Tempe worked with the

public to develop a new General Plan 2040. The concept of Low Impact Development was added to the plan in the form of General Plan strategies and goals. Voters approved the plan in May 2014. General Plan 2040 information can be found on the following website:

- <https://www.tempe.gov/government/community-development/general-plan-2040>

City of Tempe Stormwater Master Plan

Appendix A, Section VII (A), of the Permit required Tempe to review the city's stormwater master plan in the second year of the permit term and report findings of the evaluation, including recommendations, in the third annual report. A team consisting of representatives from the Environmental Services Section, Water Engineering Section, and Public Works Engineering Division met for several months to evaluate the existing stormwater master plan. Findings and needed improvements were consolidated in August 2012 and reported in the 2012-2013 Annual Report. The Tempe Area Drainage Master Study (ADMS) project, conducted by the Flood Control District of Maricopa County (FCDMC), will utilize FLO2D and Stormwater Management Model (SWMM) to meet most of Tempe's Master Plan update needs. A portion of the work on the Tempe ADMS project was completed in 2016 with the final County model completed in 2017-2018. Tempe's Engineering Division is currently soliciting a contractor to update the stormwater master plan. The Flood Control District of Maricopa County (FCDMC) has conducted two studies; the Tempe Area Drainage Master Study (ADMS) and the Lower Indian Bend Wash Area Drainage Master Study and Plan (ADMS/P) which utilized FLO2D and Stormwater Management Model (SWMM) to determine areas of potential flooding across Tempe. Subsequently, Tempe has just completed the Tempe Storm Drainage Management Study (June 2019) which took the results of those two studies and refined conceptual mitigation plans for the areas of potential flooding, provided cost estimates and ranked the potential projects. The Engineering Division will begin forwarding these projects for inclusion in the Capital Improvement Plan. The new projects that result from the management study will reduce uncontrolled flooding, which will reduce pollutants in discharges from its MS4 which receive discharges from older development areas and areas of significant redevelopment after construction is complete.

Enforcement Response Plan

Appendix A, Section III (G), of the Permit required Tempe to create a stormwater specific Enforcement Response Plan (ERP) within two years of permit issuance. In December 2012, Tempe City Council approved Tempe's new ERP. The ERP consolidates Tempe's pretreatment and stormwater program enforcement elements and was received and approved by ADEQ. See **Attachment J** for a copy of the ERP.

J. Fiscal Expenditures

Tempe’s estimated 2018-2019 reporting year expenditures related to implementation of the stormwater program are \$1,421,274. A more detailed analysis of fiscal expenditures can be found in Section 12 of this report.

K. Training Summary¹

Tempe coordinated 10 employee training events covering Permit-required training topics over the course of the 2018-2019 reporting period. Nine training events were conducted internally by city staff. One external training conference was attended by the EQS who manages the stormwater program. The conference was for five days from September 30 – October 3, 2018. A total of 268² employees attended these events. Note that Municipal Facility training included the identification and reporting of illicit and non-stormwater discharges but is not specifically categorized as IDDE training because the training event primarily focused on pollution prevention and good housekeeping. See training summary in Table 10 for specific training details.

Table 10: Summary of Training Activities

Date(s)	Target Groups	Topic(s)	Permit Training Type	Attendees	Trainer
Sep 30- Oct 3 2018	<i>Environmental Quality Specialist - Direct Stormwater Responsibilities</i>	Best Management Practices, MS4 Program components, Post construction and Low Impact Development and Green Infrastructure	Municipal Employee Training	1	WEFTEC
Feb-19	<i>Parks - Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Employee Training	60	Tempe Environmental Services Staff
Feb-19	<i>Fleet Services - No Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices, De Minimis discharges.	Municipal Facilities	22	Tempe Environmental Services
Mar-19	<i>Water Operations - Direct and No Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices, De Minimis discharges.	Municipal Facilities	26	Tempe Environmental Services

¹ Section added by Tempe to provide a more detailed and centralized summary of training events.

² Number includes employees that may have attended more than one training event.



Environmental Services Section

Date(s)	Target Groups	Topic(s)	Permit Training Type	Attendees	Trainer
Apr-19	<i>Community Development and Engineering Capital Improvement Projects (CIP) - Direct Stormwater Responsibilities</i>	Municipal Construction, Erosion and Sediment Controls, Maintenance Requirements for BMPs, Municipal Ordinances Related to Stormwater and Construction, Plan Review Procedures, Grading and Drainage Design Standards, Requirements for Structural and Non-structural BMPs on Construction Sites, Inspection Procedures, Enforcement Procedures, Post-Construction Stormwater Controls, Post-Construction Inspection Procedures.	Construction/Post-Construction	23	Tempe Community Development Staff
May-19	<i>Facilities Custodial - No Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	27	Tempe Environmental Services
May-19	<i>Facilities Maintenance - No Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	19	Tempe Environmental Services
May-19	<i>Solid Waste - No Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	53	Tempe Environmental Services
May-19	<i>Transportation Maint. & Traffic Operations - No Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	29	Tempe Environmental Services
Jun-19	<i>Environmental Services - Direct Stormwater Responsibilities</i>	Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Identifying Illicit and Non-Stormwater Discharges and Field Practices.	IDDE Municipal Employee Training	8	Tempe Environmental Services
Total Number of Training Events:					10
Total Number of Attendees:					268



4. Numeric Summary of Stormwater Management Program Activities

The table below provides a numeric summary of stormwater management practices and activities performed each year.

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	2014 - 2015	2015 - 2016	2016-2017	2017-2018	2018-2019
Illicit Discharge Detection & Elimination Program					
1. Municipal Employee Training					
Number of training sessions (on non-stormwater discharges and the IDDE program)	3	5	1	1	1
Number of employees attending training	10	24	14	9	8
2. Spill Prevention					
Number of Municipal Facilities identified with hazardous materials	49	49	50	51	51
Number of spills at Municipal Facilities with hazardous materials that occurred in outside areas	1	1	1	3	0
Number of facility assessments completed (<i>identify any issues found requiring follow-up in narrative and summarize new practices to minimize exposure</i>)	95	70	64	75	76
Date of last review of HWMP (<i>identify committee participant with stormwater expertise in narrative</i>)	2/19/2014	2/2/2016	2/8/17	2/6/18	5/13/19
3. Outfall Inspections					
Total number inspected (<i>attach or forward electronic copy of inventory or map of major outfalls and priority outfalls</i>) ¹	64	65	46	42	43

¹ All maps and inventories are maintained on file with Tempe’s Environmental Services Section and can be reviewed by ADEQ upon request.



Environmental Services Section

Stormwater Management Practice or Activity:	Annual Reporting Year (July 1 – June 30)				
	2014 - 2015	2015 - 2016	2016-2017	2017-2018	2018-2019
Number of 'priority outfalls' identified to date <i>(summarize findings and follow-up actions in narrative)</i>	19	19	19	9	9
Number of 'priority outfalls' inspected ¹ <i>(summarize findings and follow-up actions in narrative)</i>	40	42	22	9	10
Number of dry weather flows detected	7	5	2	1	2
Number of dry weather flows investigated	7	5	2	0	0
Number of major outfalls sampled ²	7	5	2	0	0
Number of illicit discharges identified	0	1	0	0	0
Number of illicit discharges eliminated	0	1 ³	0	0	0
Amount (percentage, linear miles, etc.) of storm drain inspected ⁴	8,619 feet	8,668 feet	8,645 feet	8,624 feet	4,075 feet
Number of storm drain cross connection investigations	0	0	0	0	0
Number of illicit connections detected	0	0	0	0	0
Number of illicit connections eliminated	0	0	0	0	0
Number of corrective or enforcement actions initiated within 60 days of identification ⁵	0	5	3	6	2

¹ Number reflects the number of priority outfall inspections.

² Includes field screening and analysis.

³ See Findings in 2015-2016 Report Section 3.H. for a description of the investigation.

⁴ CCTV inspections only.

⁵ Total number of corrective and enforcement action for the FY excluding minor construction and post-construction.



Environmental Services Section

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	2014 - 2015	2015 - 2016	2016-2017	2017-2018	2018-2019
Percent of cases resolved within one calendar year of original enforcement action	100	100	100	100	100
Number of illicit discharge reports received from public	90	61	75	56	84
Percent of illicit discharge reports responded to	100	100	100	100	100
Percent of responses initiated within three business days	100	100	100	100	100
Municipal Facilities					
1. Employee Training					
Number of training events <i>(dates and topics to be included in narrative)</i>	9	11	9	9	9
Number of staff trained	214	248	236	234	260
2. Inventory, Map, or Database of MS4 Owned & Operated Facilities					
Total number of facilities on inventory	149	149	149	152	152
Date identification of 'higher risk' facilities completed	12/26/2012	12/26/2012	12/26/12	12/26/12	12/26/12 ¹
Date prioritization of municipal facilities completed	12/26/2012	12/26/2012	12/26/12	12/26/12	12/26/12 ¹
3. Inspections					
Miles of MS4 drainage system prioritized for inspection	101.5	101.5	1.5	1.5	0 ²

¹ Reviewed annually for changes

² See section 3. C. the control measure to inspect 8,000 feet by CCTV was approved by ADEQ for replacement in 2019.



Environmental Services Section

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	2014 - 2015	2015 - 2016	2016-2017	2017-2018	2018-2019
Miles visually inspected ¹	101.6	202.5	1.6	1.6	0.77
Number of municipal facilities inspected ²	95	70	64	75	76
Number of 'higher risk' municipal facilities inspected	11	21	10 ³	8	11
Number of 'higher risk' municipal facilities found needing improved stormwater controls	0	0	0	0	0
4. Infrastructure Maintenance					
Linear miles of drainage system cleaned each year <i>(city to maintain records documenting specific street cleaning events)</i>	21,891.5	21,889	21,888	21,889	21,894
Record amount of waste collected from street and lot sweeping (reported in pounds, gallons, etc.) (tons)	1,175.7	1,007	1,126	985	1,189
Total number of catch basins ⁴	558	503	569	766	869
Number of catch basins cleaned	175	63	71	510	597
Amount of waste collected from catch basin cleaning (tons)	20.9	24.2	--- ⁵	43	55.7
Industrial and Commercial Sites Not Owned by the MS4					
Number of training events for MS4 staff	3	5	1	1	1

¹ Includes CCTV and above-ground linear inspections of the drainage system. Does not include cursory street inspections.

² This numeric parameter was added by Tempe to provide a more detailed explanation of the municipal inspection program.

³ Number amended after FY2016-2017 report was submitted. Thirteen inspections were conducted at ten facilities.

⁴ Inspected, includes other stormwater infrastructure such as drywells, bubbler boxes, inlets, etc.

⁵ Hauling was not conducted in 2016-2017.



Environmental Services Section

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	2014 - 2015	2015 - 2016	2016-2017	2017-2018	2018-2019
Number of municipal staff trained	14	24	14	9	8
Number of industrial facilities inspected ¹ (see Appendix A, Part V.B)	122	126	140	121	141
Number of corrective or enforcement actions initiated on industrial facilities ¹	2	1	0	0	0
Percentage of cases resolved under the ERP within one (1) calendar year of original enforcement action	100	100	100	100	100
Construction Program Activities²					
Number of training events for MS4 staff <i>(include topics in narrative summary)</i>	2	1	3	1	1
Number of municipal staff trained	24	6	29	2	23
Number of construction/grading plans submitted for review	42	26	15	26	24
Number of construction/grading plans reviewed	57	26	15	26	24
Number of construction sites inspected ³	59 ⁴	20	15	19	26
Number of corrective or enforcement actions initiated on construction facilities <i>(identify the type of actions in narrative summary)</i>	2	0	0	0	1
Post Construction Program Activities					
Number of post-construction inspections completed	17	29	28	2	28

¹ Number excludes restaurant inspections. 2015-2016 number amended see Section 3.C. of 2016-2017 Annual Report.

² Includes private and CIP activities.

³ Number may not match review and prioritization number based upon date of grading and drainage permit issuance.

⁴ See narrative in Section 3.F. in 2015-2016 Annual Report.



Environmental Services Section

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	2014 - 2015	2015 - 2016	2016-2017	2017-2018	2018-2019
Number of corrective or enforcement actions initiated for post-construction activities (<i>identify the type of actions in narrative summary</i>)	0	0	0	0	0

5. Evaluation of the Stormwater Management Program

In accordance with Section 5.4 of the Permit, this section provides an evaluation of the progress and success of the stormwater management program, including an assessment of the effectiveness of stormwater management practices in reducing the discharge of pollutants to and from the municipal storm sewer system.

Much of Tempe's stormwater program progress during the 2018-2019 reporting period consisted of continued fine-tuning of existing programs and the completion of permit-required tasks.

Quantifiable program successes include the following:

- Acquiring equipment and adding staff to conduct routine inspections and cleaning of stormwater infrastructure greatly increased the number of inspections and cleaning events and tonnage of debris removed from infrastructure. Staff also assured structures are properly labeled to increase public awareness and reduce potential pollutants.
- Updated mapping of stormwater inventory in parks provides the ability to track maintenance.
- Updated customized stormwater training materials for site specific municipal facility training.
- Sent EQS assigned to stormwater program to training at WEFTEC.
- Continued to explore new outreach opportunities to reach Neighborhoods, Home owner Associations and Businesses through neighborhood coordinator on social media and by adding newly inspected business emails to the quarterly e-Bulletin newsletter.
- Updated asset management systems to streamline tracking of inspection and maintenance activities.
- Acquired two inspections management software platforms to more easily manage industrial/commercial and restaurant inspections for stormwater compliance.
- Continued to enroll restaurants into the fats, oils and grease management program. The program reduces public health and safety concerns, plumbing backups and sewer overflows.
- Continued weekly operation of the HPCC and two specially advertised Zero Waste events to provide Tempe residents with an outlet for proper disposal of hazardous household products, potentially reducing their release into the environment or MS4.
- LID activities (**Attachment DD**):
 - Representatives from Engineering , Community Development, Water Utilities, Transportation, and Economic Development Divisions participated in the regional collaborative effort to develop the "Greater Phoenix Green Infrastructure Handbook: Low Impact Development (LID) Details for Alternative Stormwater Management". The LID Handbook includes guidance

and technical standard details and specifications for select LID techniques, so local design, planning, and development professionals can more easily integrate green infrastructure (GI) and LID in new and/or retrofit projects throughout Maricopa County.

<https://sustainability.asu.edu/sustainable-cities/resources/lid-handbook/>

- Continued participation in the Specifications and Standards Sub-Workgroup of the Sustainable Cities Network (SCN). The Specifications and Standards Sub-Workgroup continues to develop and collect uniform standards addressing alternative stormwater management with low-impact development details to be used throughout the region. Presentation was made to Maricopa Association of Governments (MAG) in 2019 about the handbook mentioned above.
<https://azmag.gov/Event/22959>
- The efforts of Tempe's Water Conservation group provided benefit to the stormwater program by reducing chemical products necessary for landscape maintenance and water runoff. The conservation group hosted several sustainable landscape workshops throughout the year on topics such as xeriscape landscape design, proper maintenance and irrigation, rain water and grey water harvesting, tree maintenance. Tempe also offers landscape rebates for xeriscape conversions. Eighty-seven (87) residential and three (3) non-residential rebates were processed this reporting year. Ten (10) rebates were also offered for new desert tree, shrub, and groundcover installations. Tempe's conservation website shares LID information on rainwater harvesting, greywater rebates, demonstration gardens and Tempe hosted workshops. <http://www.tempe.gov/conservation> Finally the new WaterSmart Customer Portal <https://tempe.watersmart.com/index.php/welcome> has several conservation recommendations, one of which specifically calls out Harvesting Rainwater and investing in greywater (which requires LID implementations in order to reuse water onsite).
- LID continues to be discussed as part of the Rio Salado + Beach Park Masterplan <https://www.tempe.gov/government/community-services/parks/rio-salado-and-beach-park-masterplan>
- Continued participation in the SCN which actively discuss urban issues associated with tree and shade, structural shade, the urban canopy, stormwater management, and low impact development (LID) techniques. The goal of the Workgroup is to standardize best practices in the area of urban forestry and expand knowledge of green infrastructure across the Valley and state of Arizona. A Tempe employee is the Chair of the SCN.
- Encouraged the use of LID in municipal and private development projects when possible. Municipal street projects are underway on Alameda Drive



including asphalt removal and median improvements for stormwater collection and bio swales. Two (2) private development projects currently implementing LID concepts at their projects to limit stormwater runoff (APS substation and Broadstone at the Grand (SRP Papago area))

While implementation of many of these stormwater management practices is assumed to have effectively reduced the discharge of pollutants to and from the MS4, this reduction is not always quantifiable. For example, due in large part to Tempe's on-site retention policy, it cannot be assumed that all debris removed from the system or all waste collected by HPCC would have ended up in a discharge to a Water of the U.S. Tempe will continue to review analytical data in the effort to identify correlations between pollutant concentration and stormwater management practices.

6. Stormwater Management Program Modifications

In accordance with Section 5.5 of the Permit, this section provides a description of modifications, if applicable, to the stormwater management program each year as follows:

A. Addition of New Control Measures

Tempe did not implement new control measures in the 2018-2019 reporting year. The last new control measures implemented were accepted by ADEQ in January 2013.

B. Addition of Temporary Control Measures

Tempe continues to implement temporary control measures related to discharge concentrations of *E. coli* and copper that were higher than applicable Surface Water Quality Standards (SWQS). The temporary measures are related to outreach/education messages. The topics and frequency focus mostly on industrial/commercial inspections. See Section 10.C of this report for details.

At the request of Parks and Recreation staff, increased facilities inspections were implemented temporarily to ensure that BMPs were maintained at several sites. Inspection frequency is anticipated to decrease as temporary BMPs are replaced with permanent infrastructure and/or practices.

C. Increase of Existing Control Measures

Tempe did not have an increase of existing control measures in the 2018-2019 reporting year.

D. Replacement of Existing Control Measures

As requested in the 2017-2018 annual report and approved by ADEQ, Tempe implemented the following update to an existing control measures:

Replacement of 8,000 feet of the closed-circuit television (CCTV) inspection criteria per year with the inspection of at least 360 catch basin inspections per year. This 450% increase above the current catch basin inspection requirement is a more effective use of resources and will continue to reduce the discharge of pollutants to the maximum extent practical. The results of Tempe's extensive investment in staff and equipment dedicated to increasing the catch basin inspection and maintenance program can be seen in Table 4. The CCTV will remain as an available resource when the need for more extensive infrastructure inspection is identified.

7. Monitoring Locations

There have been no changes to the stormwater monitoring locations for the duration of the permit.

As discussed and approved by ADEQ staff in August 2019, due to road improvements near SR-05, the monitoring location will require relocation. The decommissioning of the current site is expected to in September 2019. It is expected the required relocation, will be complete within 18 months of the decommissioning.

It was mentioned in the 2017-2018 annual report that ADEQ updated eMaps and listed the Tempe Drain as the San Francisco Canal North Branch. Historically, the Tempe Drain has been identified as an unnamed tributary to the Salt River where the confluence is located at the Salt River below Tempe Town Lake to Interstate 10 bridge with designated uses of A&We and PBC. If ADEQ determines that the receiving water, as listed in eMaps, is actually the San Francisco Canal North, data from TD-01 and TD-03 will be compared to the standards for AgI and AgL designated uses. Until notification is received to do otherwise from ADEQ, Tempe will continue to compare analytical data from the stormwater monitoring sites TD-01 and TD-03 to those consistent with designated uses for the above listed reach of the Salt River.

The designated use of the receiving water for SR-08 was changed and reported to ADEQ in the 2013-2014 Annual report. All outfall information is maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request.

8. Storm Event Records

For each monitoring location identified in Section 7.0, Table 1.0 of the Permit, summarize all measurable storm events (0.1 inch or greater) occurring in the drainage area of each monitoring location within the winter and summer wet seasons, respectively, until samples have been collected for the monitoring location. Include the date of each event, the amount of precipitation (inches) for each event, and whether a sample was collected, or if not collected, information on the conditions that prevented sampling. (Note: If unable to collect stormwater samples due to adverse climatic conditions, provide, in lieu of sampling data, a description of the conditions that prevented sampling. Adverse climatic conditions which may prevent the collection of samples include weather conditions



that create dangerous conditions for personnel, such as local flooding, high winds, electrical storms, etc.)

Tempe has consolidated the permit requested information which is included as **Attachment V**.

Tempe tracks all sampling events required by the Permit. **Attachment W** summarizes sampling status throughout the 2018-2019 reporting year. All sampling and analytical monitoring requirements were met for this reporting year.

Tempe's annual rainfall is calculated using a precipitation group on the Maricopa County Flood Control District website (http://alert.fcd.maricopa.gov/showrpts_mc.html). The group is named G054: CITY OF TEMPE and is comprised of four storm gauges in and bordering Tempe.

9. Summary of Monitoring Data (By Location)

A summary of all monitoring data for each site is provided in **Attachment X**. The table for SR-08 includes the most recent data. This site had a change in designated use for the receiving water in the 2013-2014 reporting year. All Laboratory Reports are included as **Attachment Y**.

From 2011 through September 2014, Tempe collected orthophosphate samples without field filtration, based on its MS4 permit requirement to sample total orthophosphate. However, based upon Arizona Department of Health Services (ADHS) guidance from the EPA, filtration of samples in the field is a valid component of EPA criteria for orthophosphate sampling. Tempe has modified procedures per EPA and ADHS guidance to include filtration of the sample within 15 minutes of collection.

10. Assessment of Monitoring Data

A. Stormwater Quality

Tempe has reviewed all sampling event results collected from November 2011 through December 2018. A full trending of data is included as **Attachment Z**. The trending was done by a comparison of the previous year's data maximum and average to this reporting year's (2018-2019) maximum and average by site location.

Below is a summary of the findings:

- In the 2018-2019 reporting year there were 16 sampling events; from which 1,310 analytical results were produced. From those results a total of 150 parameters were detected (conventional parameters, microbiological, metals, nutrients), 137 of the parameters were detected at levels <SWQS. There were only 13 SWQS exceedances (for *E. coli*, Copper) which

will be discussed more in this section. Overall, there was little significant difference in the results of 2018-2019 compared to previous year's data.

- For the entire dataset 2011-2019, 72 sampling events were conducted during the winter wet season (November through May during 2011-2019), and 72 sampling events were conducted during the summer wet season (June through October 2012-2019).
- Averages for rate, volume, duration, pH, and Temperature for all sites from 2011-2019 sites are as follows:
 - Average Rate (GPM): 2,203
 - Total Volume (gallons): 208,198
 - Duration (mins): 93
 - pH (S.U.): 7.5
 - Temperature (C°): 22

Conventional Parameters

- All sites were sampled for conventional laboratory parameters (i.e., Hardness, TDS, TSS, BOD, COD); the relative levels of parameters observed from site to site varied. All five sites saw a reduction in COD and four of five had a reduction in BOD (KP-01 was even with trends). Hardness was even with trends, except for KP-01 that had a 50% increase. TDS results were mixed with KP-01 and SR-08 above average, and TD-01, SR-05 and TD-03 coming in lower than average. TSS was also mixed with TD-03 and SR-08 above average, KP-01 and TD-03 below average, and SR-08 well below average.
- Based upon the assessment of conventional parameter results, there does not appear to be any specific trends indicating the degradation of stormwater quality from Tempe's MS4. The results for some parameters were higher than the permit term average TDS and TSS, while COD and BOD were below average.
- Metals and nutrients comprised the largest groups of components detected, with results observed for all nutrients and in these groups, for all sites, and at every event. Twenty-nine percent of the analytes monitored for metals had detections (41 of 140), all results were within the range of what has been detected throughout the permit term.

Microbiological

- *E. coli* was above the SWQS at each sampling location in eight of the ten sampling events it was measured. Two events were less than 220 MPN, SR-05 during the summer 2018 event and TD-01 during the winter 2018 event.

- *E. coli* concentrations were observed to have a slight decrease from the permit term average 2011-2018 result (1,652 MPN) to 2018-2019 result (1,502 MPN), for all sites and all events during the respective periods. There is no indication of degradation of stormwater quality discharges due to *E. coli* from Tempe's MS4. As stated in the permit, "*E. coli* values above the SWQS are prevalent in Arizona in high flow precipitation events." There is no indication of the *E. coli* source being linked to wastewater or sanitary sewer overflows. Tempe continues to provide educational material to the public about picking up pet waste. It is difficult to determine if this outreach effort is directly related to the decrease in *E. coli*.

Metals

- Copper was observed to be above the SWQS during five of the ten sampling events at three of the five sampling locations, SR-08 had two events <SWQS, KP-01 had two events, and TD-01 had one event <SWQS.
- Although average copper levels have been observed to mostly decrease to 15.9 ug/L in the recent sampling period when compared to previous wet seasons during the permit term average of 19 ug/L, no discernible trends have been identified. Copper is abundant in the environment, both naturally occurring and in forms associated with industrial and residential uses. Tempe will continue to monitor copper trends and determine best practices for the reduction of copper concentrations in runoff. There is no indication of degradation of stormwater quality due to copper discharges from Tempe's MS4.
- There was very little variability between summer and winter samples this year. Comparing this year's data with 2011-2018 data, the following trends were observed: KP-01 - no change, TD-01 – slight decrease, TD-03 – greater than 50% reduction, SR-05 – slight decrease, and SR-08 –slight increase.
- Trends for the most common parameter hits has not changed. Barium and copper were found in all samples, zinc was detected in nine samples, and arsenic was detected in seven of the ten samples. Minor items still occasionally show up par with the trends – one detection antimony and chromium, two detections for nickel at of the ten samples. The trend showing the reduction in lead has continued with only one detection this year.

Nutrients

- Average nutrients observed at each site in 2018-2019 demonstrate relative consistency with the results throughout the permit term, except for the KP-01 event on 11/30/2018 with a NO₂+NO₃ of 9.3 mg/l. There is no SWQS for NO₂+NO₃. The KP-01 area is primarily a residential area. It is speculated over fertilization while planting winter rye grass may be the cause for the increase. This is the first-time nitrogen has been above 5mg/L at any monitoring location. Nutrients, although a common stormwater pollutant in many areas in

the country, do not appear to be a significant contributor to stormwater pollution in the City of Tempe. Nitrogen and phosphorous species show no specific trends and there is no indication of degradation of stormwater quality discharges from Tempe's MS4.

Organic Pollutants (TPH and O&G, VOCs, SVOCs, and Pesticides)

- During the 2018-2019 reporting period, Phenol was detected one time near the reporting limit at KP01. Total Oil and Grease was detected once at TD-01 near the reporting limit; there are no numeric SWQS for Total Oil and Grease. No other organic parameters were detected in the 1,030 analyses.
- Of all Organics analyzed throughout the entire dataset (2011-2019) (i.e., Organic Toxic Pollutants – two parameters; Volatile Organic Components (VOCs) – 33 parameters; Semi-Volatile Organic Components (SVOCs) – 45 parameters; and Pesticides – 25 parameters), only 20 detects have been observed and many consisted of detection near the Practical Quantitation Level (PQL) and all were well below the SWQS. Due to the low levels and the lack of additional data points, conclusions cannot be drawn as to trending of Organics related data.
- There is no indication of degradation of stormwater quality discharges from Tempe's MS4 by Organics.
- No VOCs were detected during the permit term.

Conclusions

Based on the data collected during this permit term, no obvious discernible and consistent trends, improvements, or degradation of stormwater quality from the MS4 were observed.

During the 2012-2013 Annual Report, Tempe suspected that TD-01 sampling was being impacted by "Tempe Ditch" flow. During large rain events, the flow in the "Tempe Ditch" has the potential to back-up into the TD-01 outfall, possibly comingling other sources of stormwater and/or non-stormwater. Further evaluation of the data collected (2011-2013) has led to the conclusion that TD-01 is not impacted by "Tempe Ditch" flow. This conclusion was reached by evaluating the data for TD-01 and comparing the collected data to the remaining four sites. If standing water is observed to be "backed up" into the outfall prior to storm sampling events, it is suspected that the volume of the storm flush is sufficient to ensure that samples collected from TD-01 are primarily related to storm runoff. Tempe will track this potential concern.

B. Surface Water Quality Standards (SWQS)

Stormwater monitoring sample results conducted consistent with Permit sampling conditions have been compared to SWQS for the applicable receiving water. Summary of Monitoring Data sheets in **Attachment AA** allow for this comparison. Note that any result found to be above a SWQS is shaded in red.

The Permit allows for the testing of dissolved metals and collection of Hardness data used to calculate corresponding SWQS. Since the 2012-2013 reporting year, Tempe's approach to collecting ambient Hardness data for a perennial water body, for the purposes of SWQS comparison, has been to monitor hardness in the waterbody during times that stormwater discharges are not occurring. As explained in the 2016-2017 annual report, an evaluation to compare storm event and lake water quality over time demonstrated stormwater as significantly lower in hardness than the ambient water body (Kiwaniis Park Lake). The trend showed hardness in the stormwater decreasing over time as the lake hardness continued to increase. The data demonstrates that stormwater does not significantly alter the water quality of the lake ambient conditions. Continuing to use the hardness value of ambient lake conditions to calculate the SWQS of hardness-dependent analytes is the most conservative method for protecting the aquatic habitat.

C. Exceeding a SWQS

Tempe has been experiencing concentrations greater than SWQS for *E. coli* and copper since the 2011-2012 reporting period. Tempe identified only these two parameters as having concentrations greater than the applicable SWQS during the 2018-2019 reporting period. *E. coli* was found to be higher than the SWQS at five sites and eight of the ten sampling events. Site SR-05 was below the SWQS in July 2018 as was TD-01 in December 2018. Dissolved copper was found to be higher than the applicable hardness-dependent standard at three sites and five of the nine sampling events.

In 2014-2015, KP-01 experienced a single pH event of 9.1, greater than the SWQS. This result was a deviation from typical pH values at this outfall location. Throughout 2011-2013, the site average pH was 7.3 pH units with the previous highest pH result at the site being of 7.6. There is no known cause for the atypical result. An inspector investigated the area around KP-01 for evidence of a discharge that may have contributed to the high pH level but could not pin point a specific source in the residentially zoned area. Tempe will continue to monitor this site for pH values greater than SWQS in subsequent sampling events. Please see **Attachment AA** for details pertaining to sampling date, location, impacted receiving water, SWQS and results.

During the 2011-2012 reporting period, Tempe began the implementation of provisions outlined in Permit Section 4.0, relating to the recurrence of discharges higher than SWQS for *E. coli* and copper. After a full review of all sample results during the 2012-2019 reporting periods, there does not appear to be an immediate or obvious correlation between implemented control

measures and *E. coli* and copper concentrations. The concentrations of these pollutants appear to correspond more directly to when the sample was taken (time of year and season). Tempe will continue to evaluate existing and future analytical data in an effort to better understand impacts on pollutant concentrations in addition to following the control measures identified in Table 11 and Table 12.

Potential pollutant sources and applicable control measures are summarized in the tables below.

Table 11: Copper Investigation, Evaluation, and Action

Potential Sources of Copper	
Vehicle brake pads	CCA pressure treated wood
Mobile cleaning	Air emissions
Vehicle washing and service	Soil erosion
Architectural copper	Irrigation water
Pool/spa/fountain algaecides	SSOs
Pesticides, algaecides, root killers, and fungicides	Cooling towers
Industrial use of copper	Discharges to the POTW
Evaluated Control Measures	
Industrial Inspections - Focus on copper sources and applicable BMPs.	
Evaluate service facilities for automotive waste disposal practices.	
Outreach/Education - Pools, spa, fountain use of copper treatment and discharge practices.	
Outreach/Education - Alternatives for copper bearing pesticides, algaecides, & fungicides.	
Outreach/Education - Proper use of copper bearing pesticides, algaecides, & fungicides.	
Newly Developed/Implemented or Continued Control Measures	
Industrial Inspections - Inspection focus on potential sources of copper. BMPs discussed if applicable.	
Industrial Outreach/Education – Copper focused education and Prevention BMPs directed to industrial users.	
Public Outreach/Education – Copper focused education and Prevention BMPs directed to the general public.	
General - Continued implementation of IDDE program.	

Table 12: *E. coli* Investigation, Evaluation, and Action

Potential Sources of <i>E. coli</i>	
Animal feces (domesticated, wild, farm)	Wastewater treatment plants
Manure	On-site septic systems
Wastewater discharges	Illicit connections
Evaluated Control Measures	
Review of SSO Control Practices	
Maintenance and cleaning of sewers	
Septic tank policies	
Outreach/Education - Clean up after your pet	
Outreach/Education - Feeding wild animals at waterside locations.	
Newly Developed/Implemented or Continued Control Measures	

Review of SSO Control Practices - Continued review of practices related to response and reporting of SSO events.
Maintenance and cleaning of sewers - Continued implementation of comprehensive sanitary sewer cleaning program.
Septic tank policies - Continued non-allowance of septic tank use.
Public Outreach/Education - <i>E. coli</i> focused education and prevention BMPs directed to the general public.
Public Outreach/Education - BMP focused education and prevention BMPs directed to the general public.
Public Outreach/Education - Continued BMP focused on pet waste pick-up in public places.

11. Estimate of Annual Pollutant Loadings

An estimate of the pollutant loadings each year from the municipal storm sewer system to Waters of the U.S. for each constituent listed in Section 7.4 of the Permit detected by stormwater monitoring within the Permit term. Pollutant loadings and event mean concentrations may be estimated from sampling data collected at the representative monitoring locations, taking into consideration land uses and drainage areas for the outfall. Include a description of the procedures for estimating pollutant loads and concentrations, including any modeling, data analysis, and calculation methods. Compare the pollutant loadings estimated each year to previous estimates of pollutant loadings.

The annual pollutant loads for reporting year 2018-2019 had thirteen components that varied significantly from the average results between 2011-2018. This increase is due to an overall significant increase in the amount of rainfall (previous 4 year average rainfall was 5.5 inches, 2018-2019 average rainfall was 11.04 inches) for the reporting period. As described in section 10 of this report, a few individual analytes had higher than average results (TSS, TDS, and NO₂ +NO₃). However, the event mean concentrations for those analytes were in line with that of the previous reporting periods averages. The overall Pollutant Loading increase is attributed to the higher annual volume of rainfall creating more runoff causing higher pollutant loading. Table 13 provides a summary of 2018-2019 pollutant loading estimates and **Attachment BB** contains detailed analysis information.

For pollutant loading calculations, Tempe’s annual rainfall is calculated using a precipitation group on the Maricopa County Flood Control District website. The group is named G055: CITY OF TEMPE and is comprised of four storm gauges in and bordering Tempe.

Table 13: Annual Pollutant Loading Estimate* (tons)

Analyte	Gila River	Kiwanis Park Lake	Salt River (above TTL EDW)	Indian Bend Wash	Tempe Town Lake	Salt River (Below TTL)	Papago Park South Pond
BOD	16.4	2.06	12.4	4.77	33.5	104	0.107
COD	62.3	7.82	47.0	18.1	127	393	0.406

Analyte	Gila River	Kiwanis Park Lake	Salt River (above TTL EDW)	Indian Bend Wash	Tempe Town Lake	Salt River (Below TTL)	Papago Park South Pond
TSS	99	12.4	74.7	28.7	202	625	0.645
TDS	127	15.9	95.7	36.8	259	800	0.826
Total Nitrogen	2.77	0.347	2.09	0.802	5.64	17.4	0.0180
TKN	1.76	0.221	1.33	0.511	3.60	11.1	0.0115
TP	0.32	0.041	0.24	0.094	0.66	2.0	0
Antimony	0	0	0	0	0	0.001	0
Arsenic	0	0	0	0	0.0010	0.0032	0
Barium	0.0120	0.0015	0.0090	0.0035	0.0244	0.0756	0
Copper	0.0069	0.00086	0.0052	0.0020	0.014	0.043	0
Nickel	0	0	0	0	0	0.00303	0
Zinc	0.019	0.0024	0.014	0.0056	0.039	0.12	0

Table notes: metals with non-detects are not listed and zero (0) is < 1 lb. (0.0005 tons).

12. Annual Expenditures

Tempe’s stormwater program expenditures for the July 1, 2018-June 30, 2019 reporting period is conservatively estimated to be \$1,421,274. Funding for the program comes from Tempe’s CIP fund, and various department general and enterprise funds. Explanation of these expenditures and funding sources can be found further in this section.

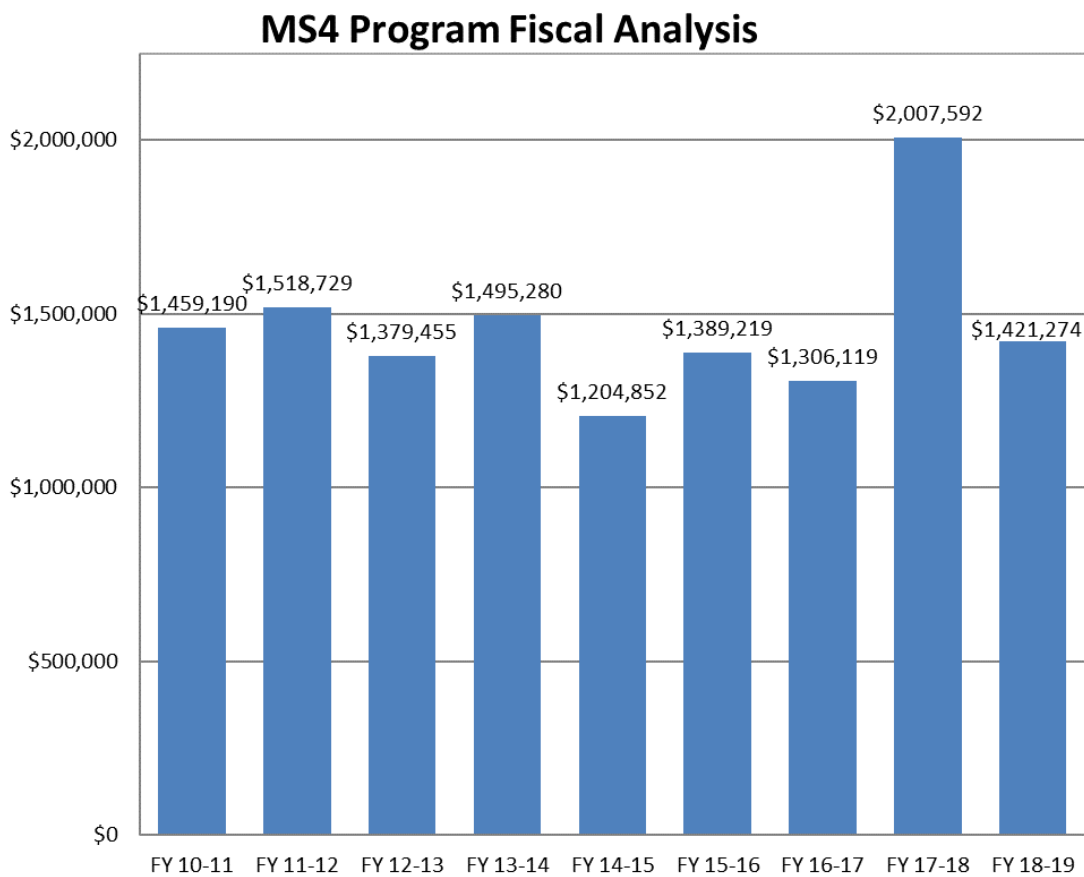
The following factors were considered when developing this fiscal analysis:

- Public involvement and participation programs are not exclusively related to the stormwater program. Accordingly, stormwater expenditures in these areas were either estimated to be one-half of the total operational budget, or the time and materials specific to stormwater activities.
- Most of the operational street sweeping activities are funded as a stormwater program component and are reflected as such.
- Employee attendance at training events hosted internally is not incorporated as a stormwater expenditure, though cost to develop and conduct training is considered.
- Adopt-A-Park programs are volunteer events that have been restructured to run solely on a volunteer basis; Tempe expenses are negligible.

Tempe’s stormwater expenditures reflect a decrease from the 2017-2018 reporting year. The following considerations help explain the overall and specific decrease expenditures:

- The significant decrease in stormwater costs this reporting period is primarily due to Water Operations Section development of an in-house inspections and cleaning program. There were one-time expenses for vehicles the past two reporting years which didn't recur this year.
- There was a decrease from the previous year (\$102,204) in expenditures for wet weather sampling staff and equipment.
- Other incremental decreases were seen for CCTV, analytical costs, contracted infrastructure cleaning costs, capital expenses for stormwater infrastructure.

Figure 2: Fiscal Analysis



Tempe cannot accurately estimate the scope of budget changes and cost allocations for the 2019-2020 reporting year; however, the city does anticipate some expenditures to continue to be higher than previous years due to the assumption of the in-house maintenance program. Tempe will continue to streamline various city processes and increase operational efficiencies to ensure that all stormwater regulatory mandates are met in an economically and environmentally responsible manner. A full summary of this Fiscal Analysis can be found in Table 14.

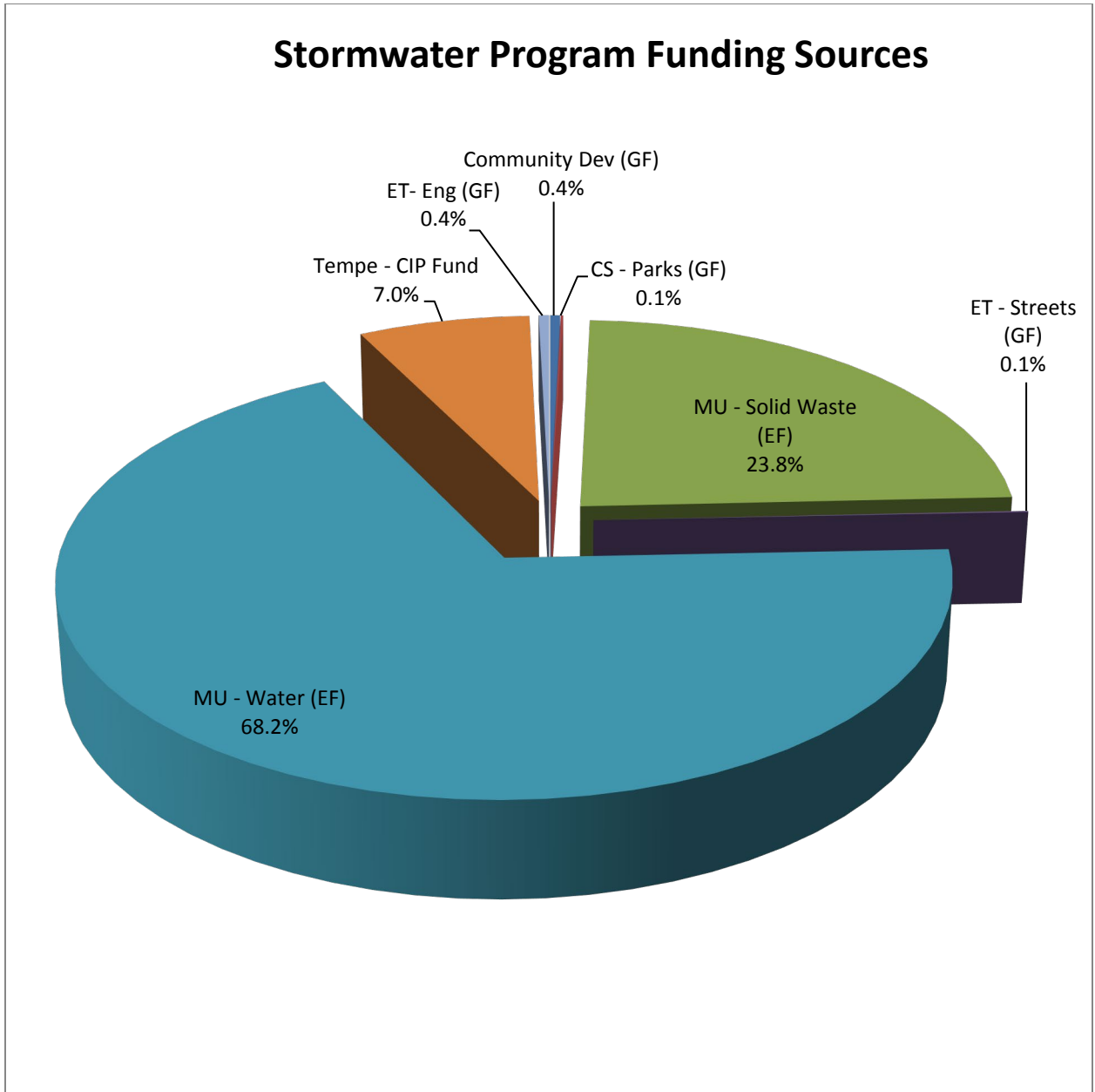
Table 14: Tempe MS4 Annual Expenditures and Fiscal Analysis

Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Program Administration (annual reporting, SWMP development and implementation, training, etc.)	\$354,182	MU - Water (EF)	1.75 EQS 0.25 EPS
Legal Counsel	\$0	MU - Water (EF)	Legal counsel - time
Public Education and Outreach			
Materials	\$8,813	MU - Water (EF)	BMP Brochure Printing / Promo Material / Labels
Memberships	\$4,000	MU - Water (EF)	STORM Dues
Other	\$900	MU - Water (EF)	Outreach Booth for Festival of Arts
Public Involvement and Participation			
Hazardous Mat Safety/HPCC	\$337,921	MU - Solid Waste (EF)	(1/2 HPCC operational expenses)
Adopt-A-Park	\$0	CS- Parks and Recreation (GF)	Operated by volunteers no City staff costs
Adopt-A-Path/Street	\$1,200	ET- Streets (GF)	Full Program Expense
Training (External)	\$2,489	MU - Water (EF)	WEFTEC
Capital expenses for new, replaced, or repaired stormwater sewers, capital for facility replacement.	\$100,000	Tempe - CIP Fund	Repair and replacement of catch basins
Operational expenses for cleaning and/or repairing stormwater sewers.			
Cleaning / Repair (Internal)	\$271,080	MU - Water (EF)	Staff Time
Cleaning / Repair (Contract)	\$12,028	MU - Water (EF)	Spoils handling / contracted cleaning services
Other expenses/equipment		MU - Water (EF)	
Engineering Capital Construction Stormwater Program	\$6,048	ET - Eng. (GF)	Staff Time

Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Private Construction Stormwater Program	\$5,781	CD - DS (GF) Developer Fees	Staff Time
Stormwater GIS development, maintenance, and operations, staff time, etc..	\$52,742	MU - Water (EF)	Staff Time
Inspection / Enforcement (IDDE, Industrial / Commercial, etc.)	157,338.86	MU - Water (EF)	Staff Time & Equipment
Outfall Inspections / Wet weather Sampling	52,458.41	MU - Water (EF)	Staff Time & Equipment
Analytical			
Analytical	\$19,413	MU - Water (EF)	
Staff Time - Chemists	\$16,111	MU - Water (EF)	
CCTV	\$3,386	MU - Water (EF)	Staff Time & Equipment
Parks and Recreation	\$1,400	CS – Parks and Recreation (GF)	Staff Time & Equipment
Streets			
Street sweeping	\$213,781	MU - Water (EF)	4 FTEs - Stormwater Expenditures / Crash truck
Permit Fee	\$10,000	MU - Water (EF)	Permit Fee
Total	\$1,421,274		

A summary of funding sources can be found below.

Figure 3: Funding Sources



13. Attachments

To save resources and paper, Tempe is providing all attachments in electronic format. In the event ADEQ feels that there is missing information or would like paper copies of any attachment, please feel free to contact Tempe’s stormwater representative. Table 15 summarizes the attachments.

Table 15: Summary of Report Attachments

Attachment	Description	Attachment	Description
A	Outreach, Education, Awareness	P	Industrial/Commercial Inspections
B	STORM Annual Report	Q	Restaurant Inspections
C	Training Sign-In Sheets	R	Non-Filer Notifications
D	ESS ARCA Infrastructure Inspections	S	Construction Inspections
E	MS4 Cleaning Summary	T	Tempe City Code Chapters 12 & 19
F	Parks and Recreation Infrastructure Inspections	U	Outfall Inspections
G	CCTV Inspection Reports	V	Sampling Event Parameters
H	Call-out Summary	W	MS4 Sample Event Tracking
I	Enforcement Documents	X	Summary of Monitoring Data
J	City of Tempe Enforcement Response Plan	Y	Laboratory Reports
K	Municipal Facility Inspections	Z	Data Trending
L	Municipal Facility Chemical Handling and Spill Procedures	AA	SWQS Comparison
M	Hazardous Waste Management Plan	BB	Pollutant Loading report
N	COT MS4 Pesticide Herbicide Plan	CC	COT SWMP (Minus Attachments)
O	MSGP- SARA Inventory	DD	LID Information