



CITY OF TEMPE

2017-2018

ANNUAL PHASE I MS4 REPORT

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

August 2018

*Prepared by the City of Tempe
Public Works Department
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, 2017 – June 30, 2018

D. Stormwater Management Program Contact

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Title Environmental Program Supervisor
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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.

A handwritten signature in blue ink, appearing to read 'Justin [unclear]', written over a horizontal line.

Certifying Official

A handwritten date '9-19-18' in blue ink, written over a horizontal line.

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 2017-2018 reporting year, Tempe reached eleven target groups totalling approximately 488,564 people and/or businesses while covering a wide array of stormwater topics. The 65,567 increase in the number of people reached, above the 2016-2017 estimated reach of 421,997, 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	221	BMP brochures and FOG information given during inspections	Industrial, Commercial Businesses, Restaurants
Social Media	All Year	Stormwater Pollution Prevention PSA	54	YouTube Video	General Public, Residents

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Tempe Today Article	Jul-17	Monsoon Preparation, Waste Management, Green Organics	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Tempe Today Article	Aug-17	Landscape maintenance and Green Waste	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Tempe Today Article	Sep-17	Landscape Classes: Water Harvesting, Irrigation, Turf	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
E-Bulletin (3Q2017)	Sep-17	Stormwater Annual Report and Best Management Practices	207	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Cub Scout Tour¹	Sep-17	Stormwater Pollution Prevention	15	Stormwater Activity Books, BMP Tip Bookmarks, Tote bags	General Public
Tempe Today Article	Oct-17	Zero Waste: Household Products Collection Center	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
HOA Outreach¹	Oct-17	Pet Waste	60	Pet Waste Bags	HOA and Residential Community
ASU Homecoming¹	Oct-17	Stormwater Pollution Prevention Information	300	Best Management Practice Brochures: Home repair, Yard & Garden, Pet waste, Pools, FOG, Copper, Auto repair & Pet waste bags.	Downtown Visitors

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

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Neighborhood Outreach¹	Oct-17	Winter Grass Tips, Ebulletin		Facebook Post to Neighborhood and HOA's in Tempe with Links to video and BMP tips	HOA and Residential Community
AZ Water Picnic	Oct-17	Stormwater Pollution Prevention	100	Best Management Practice Brochures: Home repair, Yard & Garden, Pet waste, Pools, FOG, Copper, Auto repair & Pet waste bags.	General Public, Residents
Social Media	Oct-17	Ebulletin Annual Report/BMP's	819	Facebook Posts: Pollution Prevention and Links to Tempe Program Webpages	General Public, Residents
Tempe Today Article	Nov-17	Holiday Grease Disposal	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Tempe Today Article	Dec-17	Holiday Tree Recycling/compost	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Tempe Arts Festival²	Dec-17	Stormwater Pollution Prevention, Stormwater Management Plan(SWMP) available for review & feedback	487	Best Management Practice Brochures: Home repair, Yard & Garden, Pet waste, Pools, FOG, Copper, Auto repair & Pet waste bags.	General Public, Residents, Downtown Visitors

¹ Neighborhood outreach messages sent to 216 organizations (134 HOA's and 82 Neighborhood Associations) unknown number of residents reached.

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

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Tempe Today Article	Jan-18	Zero Waste: Household Products Collection Center	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Neighborhood Outreach¹	Jan-18	Pool BMP's, Storm Debris Cleanup		Facebook Post to Neighborhood and HOA's in Tempe with Links to video and BMP tips	HOA and Residential Community
E-Bulletin (4Q2017)	Jan-18	Waters of the US, Inspections and Best Management Practices	206	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Tempe Today Article	Feb-18	Stormwater Pollution Prevention: Only Rain in the Storm drain	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Tempe Today Article	Mar-18	Zero Waste: Household Products Collection Center	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
AZ Water for People 5K²	Mar-18	Stormwater Pollution Prevention	37	Best Management Practice Brochures: Home repair, Yard & Garden, Pet waste, Pools, FOG, Copper, Auto repair & Pet waste bags.	General Public, Residents

¹ Neighborhood outreach messages sent to 216 organizations (134 HOA's and 82 Neighborhood Associations) unknown number of residents reached.

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

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Tempe Arts Festival¹	Mar-18	Stormwater Pollution Prevention, Stormwater Management Plan(SWMP) available for review & feedback	519	Best Management Practice Brochures: Home repair, Yard & Garden, Pet waste, Pools, FOG, Copper, Auto repair & Pet waste bags.	General Public, Residents, Downtown Visitors
Neighborhood Outreach¹	Mar-18	IDDE/Pet Waste	40	Best Management Practice Brochures: Pet waste, Pet waste bags, stickers IDDE Door hangers.	HOA and Residential Community
E-Bulletin (1Q2018)	Mar-18	Best Management Practices, ADEQ Updates: Construction General Permit, DeMinimis General Permit, MyDEQ	206	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Social Media	Mar-18	SWMP Input/ Outreach event	20	Facebook Posts: Event Announcement and Link to Tempe Program Webpages	General Public, Residents
Social Media	Mar-18	SWMP Input/ Outreach event	455	Facebook Posts: Event Announcement and Link to Tempe Program Webpages	General Public, Residents
Social Media²	Mar-18	SWMP Input/ Outreach event	1	Twitter Posts: Event Announcement and Links to Tempe Program Webpages and Links to Tempe Program Webpages	General Public, Residents

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

² Tempe Twitter account has 36,000 followers an unknown number of whom were reached by these posts. Reach shown were viewer reactions to post.

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Social Media	Apr-18	Stormwater Pollution Prevention: Pool Maintenance	14	YouTube Video	General Public, Residents
Social Media	Apr-18	Stormwater Pollution Prevention: Yard Maintenance	21	YouTube Video	General Public, Residents
Social Media	Apr-18	Stormwater Pollution Prevention: Pet Waste	17	YouTube Video	General Public, Residents
Tempe Today Article	May-18	Monsoon Preparation	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Sister Cities¹	May-18	Stormwater Pollution Prevention	70	Stormwater Swag Pencils, notepads, Magnets link to Tempe Program Webpages	Residents, Schools
Social Media	May-18	Pool Maintenance	7	Facebook Posts: BMP's for Pool Maintenance	General Public, Residents

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

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
SMART 'n Sustainable Saturday - Neighborhood Outreach¹	May-18	Stormwater Pollution Prevention Information	78	Best Management Practice Brochures: Home repair, Yard & Garden, Pet waste, Pools, FOG, Copper, Auto repair & Pet waste bags.	HOA and Residential Community
Neighborhood Outreach¹	May-18	Stormwater Pollution Prevention: Vehicles, Pools Pets	75	Best Management Practice Brochures: Pet waste, Pools, Auto repair, IDDE Door hangers	HOA and Residential Community
Neighborhood Outreach¹	May-18	BMP's Yard Maintenance		Facebook Post to Neighborhood and HOA's in Tempe with Links to video and BMP tips	HOA and Residential Community
Development Services²	May-18	Stormwater Pollution Prevention Information	100	Best Management Practice Brochures: waste, BMP Tip Bookmarks & Pet waste bags.	Development Community, Construction Site Operators
Social Media	Jun-18	Monsoon Preparation	2	Twitter Posts: BMP's and Links to Tempe Program Webpages	General Public, Residents
Tempe Today Article	Jun-18	Monsoon, Landscape Waste, Watering	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses

¹ Neighborhood outreach messages sent to 216 organizations (134 HOA's and 82 Neighborhood Associations) unknown number of residents reached.

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

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Social Media	Jun-18	Pool Maintenance	35	Facebook Posts: BMP's for Pool Maintenance	General Public, Residents
Social Media¹	Jun-18	Monsoon Yard Care	2	Twitter Posts: BMP's and Links to Tempe Program Webpages	General Public, Residents
Social Media³	Jun-18	Monsoon Preparation	10	Twitter Posts: BMP's and Links to Tempe Program Webpages	General Public, Residents
Social Media	Jun-18	Monsoon Prep/Storm drain BMP's	38	Facebook Posts: BMP's and Links to Tempe Program Webpages	General Public, Residents
Downtown / Tempe Business Outreach	Jun-18	Stormwater Awareness Material Specific to Downtown Tempe	132	Flyers Stormwater Awareness Near Tempe Town Lake	Commercial Businesses, Restaurants, Downtown Tempe Businesses
E-Bulletin (2Q2018)	Jun-18	Dumpster Best Management Practices, ADEQ Updates	216	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial

¹ Tempe Twitter account has 36,000 followers an unknown number of whom were reached by these posts. Reach shown were viewer reactions to post.

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Type of Materials Distributed	Target Groups
Tempe Channel 11 Video Broadcast	All year Est. 25 times/mo.	Stormwater Pollution Prevention Information	26,161 ¹	Videos on Stormwater pollution prevention Information	General Public, Residents
			488,564	Estimated annual total of people or businesses reached through 47 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 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,

¹ Tempe Channel 11 viewership numbers were not included in the total numbers reached since viewership could not be measured. Tempe Channel 11 has 26,161 subscribers, an unknown portion of whom were reached by the video.

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, Surprise, and Tolleson. A Tempe representative regularly attends the monthly STORM meetings. Tempe continues to have a representative on the STORM Board of Directors allowing the city to directly shape the future of this regional organization.

Key STORM accomplishments for fiscal year 2017-2018 include the following:

- Events - STORM members conducted 77 events or workshops throughout the central Arizona region with an estimated 300,000 attendees, of which 13,000 engaged with municipal staff about stormwater pollution prevention.
- Social Media -
 - AZSTORM Facebook page. STORM posted 232 times with a reach of 82,505 resulting in 5,759 actions taken, 1,649 Followers (increase from 1,277) and 1,642 Page Likes (increase from 1,293).
 - Employed ABC15 creative advertising for eight-month campaign, using banner ads on their website, Facebook ads, Facebook posts, and large banner ads, resulted in more than 3.5M impressions and almost fifteen thousand clicks (engagement).;
- Website - received a total of 12,600 webpage views; by 6,528 new users and 617 returning visitors. There were nearly 8,000 webpage sessions in 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. (Table 1);
- Videos - three educational videos were developed with information about pets, lawns, and pools. The component contaminants and best practices to manage pollutant discharges were covered by a handsome talking dog. These can be found on STORM's YouTube channel (a.k.a., arizona storm).
- Promotional Items - minimized variety of items and focused on relevant messaging and gadgets (pet waste bags, notepads, and key chains); and,

The Fiscal Year 2018 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 416 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 website listed below.

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

Table 2 summarizes the number of events that occurred during the 2017-2018 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
<i>Tempe Adopt-A-Path</i>	13	49	45
<i>Tempe Adopt-A-Street</i>	25	239	143
<i>Tempe Adopt-A-Park</i>	17	228	228
Totals	55	516	416

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 2017-2018 reporting year, Tempe advertised and conducted two open meeting events at the Tempe Arts Festivals. See Table 1 for details.

Parks

Tempe’s Parks Services Section 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. In

an effort 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 phone number and stormwater webpage for purposes of allowing public discussion of stormwater issues and providing copies of stormwater material and the most current SWMP. The general contact number and program information location are as follows:

- 480-350-2678
- <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 2017-2018, HPCC advertised and hosted two special Zero Waste Events. The first event was in November 2017 the other was in April 2018. The events had 592 and 556 vehicles, respectively, pass through the center to dispose of household hazardous materials. These special events are included in the summary below.

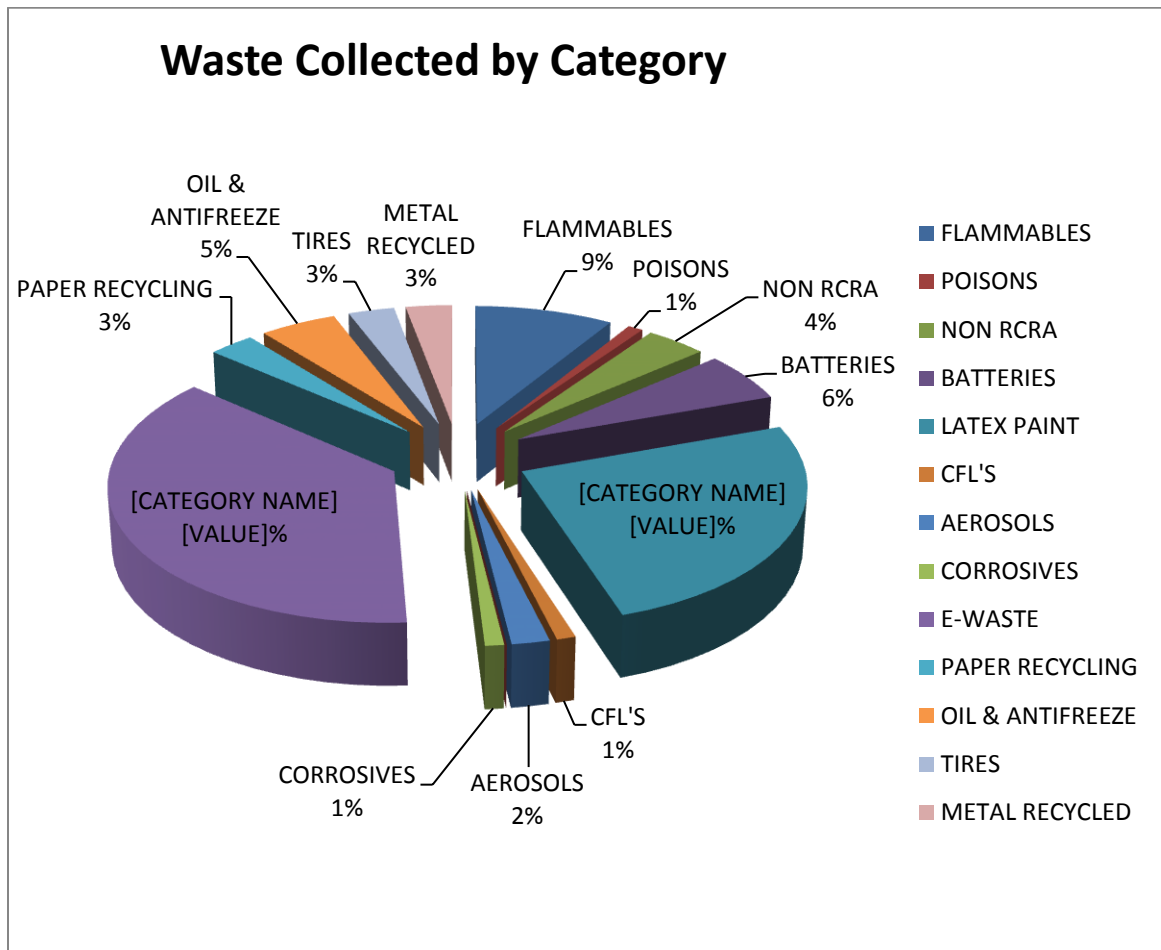
Table 3 summarizes HPCC events during the 2017-2018 reporting year.

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	9,619	453,366 pounds

Below is a breakdown of all waste collected at the center, of which 94% was recycled.

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, 28 restaurants joined for a total of 199 enrollments 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 2017-2018 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 2017-2018 reporting year, stormwater training for this group consisted of an hour internal training event attended nine staff members by five ECIs, one ECS, an EQS, an intern and an EPS. Internal training focused on overall program management of a MS4, IDDE components, inspections, enforcement, housekeeping and spill prevention best management practices.

As an efficiency measure in 2013-2014, Tempe's WQs were assigned to conduct outfall screening. WQs will receive a training update in the 2018-2019 reporting year.

Of the 243¹ Tempe employees who received training during the 2017-2018 reporting year, approximately 232 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.

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

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.

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 Services, 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 2017-2018 reporting year, two ARCA area catch basin inspection events occurred. As a result, 30 catch basins were inspected, 20 of which required referral for cleaning, and these are included in Table 4 under Environmental Services 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 Services Section 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 2017-2018 reporting year, the Tempe Parks Services Section inspected 288 stormwater assets including catch basins, inlet structures, drywells, bubbler boxes, and retention basins. Twenty-eight of the 288 inspected stormwater assets were referred for cleaning five 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 2017-2018 reporting year, Tempe cleaned approximately 21,888 linear miles of streets effectively removing approximately 985 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. This crew also conducts MS4 CCTV inspections. During the 2017-2018 reporting year, Tempe inspected 8,624 feet (1.63 miles) of underground MS4 conveyance. 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.

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 beginning in 2017-2018 stormwater infrastructure. Water Operations also maintains the contracts for any additional infrastructure cleaning services needed.

In FY 2015-2016 Tempe City Council approved the addition of two vehicles and three staff members for stormwater infrastructure inspection, cleaning and maintenance. In 2016-2017 the positions were filled, vehicles were requisitioned,



and one vehicle was invoiced. The second vehicle, a vactor truck, was invoiced in the 2017-2018 reporting year for the amount of \$401,717. The section began conducting stormwater inspection, cleaning and maintenance activities in October 2017. The investment of staff and equipment to a dedicated stormwater crew has made a significant increase in inspection and cleaning numbers. Inspections increased by 197 and cleanings increased by 439 over the 2016-2017 reporting year results can be seen in Table 4.

Prior to the assignment of stormwater infrastructure crew, stormwater inspections were secondary responsibilities for the staff conducting them. Dedicated staff are conduct more detailed inspections providing added benefit to the stormwater management program. Additionally, the crew has assumed assuring that storm structures are properly labeled. The crew labeled or replaced worn labels on approximately 482 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
ARCA	30	-	-	20*	-	
<i>Environmental Services (other)</i>	-	-	-		-	
<i>Parks/Common and Rec. Areas</i>	288	5	-	28	-	
<i>Streets (excluding street sweeping)</i>			-	-	-	
<i>Pipe (CCTV)</i>			1.63	-	-	
<i>Water Operations</i>	448	14		482	0.59	43
<i>Streets (including street sweeping)</i>	-	-	-	-	21,888	985
Totals	766	19	1.63	510	21,889	1,028

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 56 call-outs that Tempe’s Environmental Services Section received, 56 were either directly or indirectly related to stormwater concerns. All calls were responded to and investigated. 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
56	56	100	56	100

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 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 2017-2018 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 42 outfall inspections, 121 industrial/commercial inspections, 100 restaurant inspections, and 56 call-outs:

- Six potential or actual illicit discharges to the MS4 resulted in the issuance of official violation/warning letters to four commercial businesses and two residents. Enforcement documents are in **Attachment I**. Note that violation/warnings are issued in accordance with Tempe’s Enforcement Response Plan and points are assessed to the discharger. See **Attachment J** for the plan 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>	42	
<i>Industrial/Commercial (non-restaurant)</i>	121	6 Violation/Warning letters for discharges or potential discharges of non-stormwater to the right of way or MS4
<i>Restaurant</i>	100	
<i>Call-Out (stormwater)</i>	56	
<i>Catch Basins and Other Infrastructure</i>	30	20 Infrastructure referred for Cleaning
Total	349	

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 in 2012 to accommodate this focus. In 2017 two sites, Well #16 and Tempe Marina, were changed from priority #3 to a priority #2. Table 7 summarizes the Municipal Facility inventory and prioritization.

Table 7: Summary of Priority Municipal Facilities

Department/ Division	Priority #1 Facilities	Priority #2 Facilities	Priority #3 Facilities	Number of Facilities
<i>PW-Water</i>	3	13	21	37
<i>Fire</i>	1	8	1	10
<i>Parks</i>	5	5	55	65
<i>Community Services</i>	0	5	11	16
<i>Transportation</i>	1	2	4	7
<i>Police</i>	0	4	1	5
<i>PW-Other</i>	2	0	0	2
<i>Miscellaneous</i>	0	2	8	10
Totals	12	39	101	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.

Three PW-Water well facilities; Well #17, Well #18 and Well #19 were added to the facility inventory this year. There were no 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 2017-2018 reporting year, 75 inspections were conducted at 71 facilities.

Table 8 summarizes all 2017-2018 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	8	8	67
<i>Priority 2</i>	39	20	20	51
<i>Priority 3</i>	101	43	47	43
Totals	152	71	75	47

Results

Results and/or activities and control measures implemented as a result of the 75 inspections conducted in the 2017-2018 reporting year are as follows:

- There were no significant findings and no follow up actions required, other than described below, for the 75 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 has secured funding to upgrade storm drainage for five facilities (Tempe Diablo Maintenance, Kiwanis Maintenance, Optimist, Goodwin and Stroud Parks). Engineering studies have begun, and Parks projects have been placed on a prioritization schedule. Improvements were completed at Goodwin Park in March 2018.

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 initial 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 three minor municipal facility spill incidents reported to the Environmental Services Section during the 2017-2018 reporting year. Each event was small, controlled and with no release outside the immediate area. The spill plan (**Attachment L**) was used in each incident.

- On January 18, 2018, there was a small spill of about two (2) gallons of diesel at the JGM Tempe Water Treatment Plant. The spill was from an incorrect valve setting on a portable generator. The spill occurred on a paved surface. The spilled material was cleaned by trained and certified City staff. All internal spill reporting procedures were followed, which allowed for quick response.
- On January 5, 2018, there was a small non-hazardous spill of hydraulic fluid from cylinder blow-out on a City refuse roll-off truck at the JGM Tempe Water Treatment facility. The spill occurred on a paved surface. Total volume of the spill was estimated to be approximately seven and a half (7.5) gallons. The spilled material was cleaned by a commercial contractor. All internal spill reporting procedures were followed, which allowed for quick response.
- On October 31, 2017, a small non-hazardous spill of hydraulic fluid from cylinder leak on a City refuse truck near the fuel island at the EVBOM facility. The spill occurred on a paved surface. Total volume of the spill was estimated to be approximately two (2) gallons. The spilled material was cleaned by trained and certified City staff. All internal spill reporting procedures were followed, which allowed for quick response.

Additionally, two municipal sanitary sewer overflows (SSO) occurred in the 2017-2018 reporting year. Notification of the events were reported to the appropriate regulatory agencies at the time of the occurrence.

- On May 20, 2018, a release of approximately 35 gallons occurred in the public right of way near the NE corner of Priest & Knox, Tempe. Nearby stormwater infrastructure received 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 potential construction debris 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 February 15, 2018, a release of about 10 gallons occurred in the public right of way near 2005 W Baseline Road. 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 restaurant down-stream that caused a grease 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 included as **Attachment M**. 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. 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 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 MS4 Pesticide Herbicide Plan is included as **Attachment N**. The plan is reviewed annually by a Parks Services Section representative, who also serves as Tempe’s IPM Program Coordinator.

- Tempe’s Parks Services Section 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. 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 Intellex (<http://www.intellex.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 will be 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

Map Description	Reporting Year Map Completed or Updated	Map Name
<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>	2010-2011	SWMP ATTACHMENT G: KP-01, SR-05, SR-08, TD-01, TD-03 Stormwater Monitoring Location Fact Sheets
<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 2017 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 1,305 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 Grease Cooperative as part of 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 121 industrial/commercial facilities subject to SARA Title III, MSGP, and Industrial Pretreatment requirements; and 100 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. Six significant findings as the result of drive-by inspections or call-outs resulted in corrective and enforcement actions. 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 a total of six findings requiring formal enforcement related to illicit discharges to the MS4. Enforcement actions taken were at four businesses; a carpet cleaning company, a pool maintenance company, a construction site, and a storage facility for non-stormwater discharges into the MS4. Two enforcement actions were taken on Tempe residents for non-stormwater discharges to the right of way. See **Attachment I** for violation/warning letters and NOVs.

In addition to addressing minor and major deficiencies, Tempe inspectors regularly provide facilities information that may require coverage with ADEQ. During the 2017-2018 inspection year, Tempe identified 11 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 9, 2017, and July 12, 2017. See **Attachment R** for copies of non-filer notifications.

F. Construction Program Activities

Status

Tempe's stormwater construction program is managed by the Public Works Engineering and Community Development/Development Services Divisions. The program encompasses plan review, inventory, prioritization, inspection, and enforcement of private and Capital Improvement Project (CIP) 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 2017-2018 reporting year, Tempe has reviewed and inventoried 100 percent of all twenty-six new construction projects meeting the land disturbance criteria were added to the existing inventories. Tempe identified twenty-two private development projects and four CIP projects requiring review inventory, prioritization, and inspection.

Inspection Findings

Stormwater BMPs are checked as a part of other inspections on site. During the 2017-2018 reporting year, the following construction site stormwater inspections occurred.

For private development, eighteen qualifying construction sites were inspected in the reporting period. Seventeen inspections were at active construction sites. As a carryover from the 2016-2017 inventory, one post construction site was inspected in July 2017. Twenty-one sites were finalized and will be inspected within twelve months, as part of the project closeout inspection, for post construction controls.

For CIP projects, five inspections were conducted at three locations in the reporting year. They include four active CIP site inspections were conducted at two sites. As mentioned in

the 2016-2017 annual report, an inspection for post construction controls was conducted at Tempe Gardens.

The CIP Group did not perform an inspection for CIP Project #3205851 Water Storage Tank Rehabilitation – Hayden Butte during the active construction phase. However, the subcontractor Logan Simpson Design performed seventeen (17) inspections at the Hayden Butte site during the course of FY17-18. It has been determined that there have been no apparent adverse MS4-related impacts. These inspections forms are available upon request. CIP Group is currently working with staff to make procedural changes to ensure that future projects do not experience a lack of inspections. A final post construction inspection for the site will be conducted within one year of the project completion date. The inspection will be included with the information for the 2018-2019 reporting period.

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

No corrective or enforcement actions were needed or taken during this reporting period for construction activities.

No non-filers were identified. The Tempe 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, do not anticipate the identification of non-filers.

Training

Stormwater training for employees directly involved with construction activities occurred on April 10, 2018 for a new Engineering staff member. Training for Community Development employees with stormwater responsibilities was held on April 5, 2017. Refresher training for employees with construction site responsibilities will be conducted in 2018-2019. 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 Public Works 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 NOI is required.

Corrective Action and Enforcement

See section 3.F. One private construction site completed construction and received post-construction inspection. One qualifying Engineering CIP construction sites completed construction and received post-construction inspections in the reporting year.

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 Public Works Deputy 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 developed an IDDE Program Guidance Manual to bring consistency and clarity to procedures involved during outfall inspections and investigations. During the 2016-2017 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, ten sites were removed from priority status during the reporting year. 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 2014-2015 reporting year, WQSs are responsible for dry weather screenings at assigned outfalls 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 2016-2017 reporting year, Tempe WQs conducted 42 outfall inspections. Of these, 9 inspections were completed at priority outfalls, 33 were routine major outfall inspections. One site, GD-01 had dry weather flow that had previously been identified as irrigation tail water. At eleven of the inspections sites there was moisture identified without the presence of flow for field screening. Five sites were wet without flow and 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 nor were revisions made to existing stormwater Code during the 2017-2018 reporting year.

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 2018 to reflect role changes in the organization and document agreed upon enforcement protocol for construction sites. It 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:

- <http://www.tempe.gov/GP2040>

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 PW 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.

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 plan.

J. Fiscal Expenditures

Tempe's estimated 2017-2018 reporting year expenditures related to implementation of the stormwater program are \$2,007,592. 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 2017-2018 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 two and a half days from August 29 - August 31. A total of 243² 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
Aug-17	<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	StormCon
Jan-18	<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-18	<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	30	Tempe Environmental Services
Feb-18	<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	24	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
Mar-18	<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	23	Tempe Environmental Services
Mar-18	<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
Apr-18	<i>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	2	Tempe Public Works Engineering Staff
Apr-18	<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	49	Tempe Environmental Services
May-18	<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	26	Tempe Environmental Services
Jun-18	<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.	Municipal Facilities	9	Tempe Environmental Services
Total Number of Training Events:					10
Total Number of Attendees:					243



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:	2013 - 2014	2014 - 2015	2015 – 2016	2016-2017	2017-2018
Illicit Discharge Detection & Elimination Program					
1. Municipal Employee Training					
Number of training sessions (on non-stormwater discharges and the IDDE program)	3	3	5	1	1
Number of employees attending training	15	10	24	14	9
2. Spill Prevention					
Number of Municipal Facilities identified with hazardous materials	53	49	49	50	51
Number of spills at Municipal Facilities with hazardous materials that occurred in outside areas	1	1	1	1	3
Number of facility assessments completed (<i>identify any issues found requiring follow-up in narrative and summarize new practices to minimize exposure</i>)	98	95	70	64	75
Date of last review of HWMP (<i>identify committee participant with stormwater expertise in narrative</i>)	2/19/2014	2/19/2014	2/2/2016	2/8/17	2/6/18
3. Outfall Inspections					
Total number inspected (<i>attach or forward electronic copy of inventory or map of major outfalls and priority outfalls</i>) ¹	62	64	65	46	42

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

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	2013 - 2014	2014 - 2015	2015 - 2016	2016-2017	2017-2018
Number of 'priority outfalls' identified to date <i>(summarize findings and follow-up actions in narrative)</i>	19	19	19	19	9
Number of 'priority outfalls' inspected ¹ <i>(summarize findings and follow-up actions in narrative)</i>	39	40	42	22	9
Number of dry weather flows detected	11	7	5	2	1
Number of dry weather flows investigated	1	7	5	2	0
Number of major outfalls sampled ²	11	7	5	2	0
Number of illicit discharges identified	0	0	1	0	0
Number of illicit discharges eliminated	0	0	1 ³	0	0
Amount (percentage, linear miles, etc.) of storm drain inspected ⁴	10,223 feet	8,619 feet	8,668 feet	8,645 feet	8,624 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	12	0	5	3	6

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:	2013 - 2014	2014 - 2015	2015 - 2016	2016-2017	2017-2018
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	59	90	61	75	56
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>	5	9	11	9	9
Number of staff trained	157	214	248	236	234
2. Inventory, Map, or Database of MS4 Owned & Operated Facilities					
Total number of facilities on inventory	143	149	149	149	152
Date identification of 'higher risk' facilities completed	12/26/2012	12/26/2012	12/26/2012	12/26/12	12/26/12
Date prioritization of municipal facilities completed	12/26/2012	12/26/2012	12/26/2012	12/26/12	12/26/12
3. Inspections					
Miles of MS4 drainage system prioritized for inspection	101.5	101.5	101.5	1.5	1.5
Miles visually inspected ¹	122.1	101.6	202.5	1.6	1.6

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



Environmental Services Section

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	2013 - 2014	2014 - 2015	2015 – 2016	2016-2017	2017-2018
Number of municipal facilities inspected ¹	76	95	70	64	75
Number of ‘higher risk’ municipal facilities inspected	10	11	21	10 ²	8
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>	22,499 ³	21,891.5	21,889	21,888	21,889
Record amount of waste collected from street and lot sweeping (reported in pounds, gallons, etc.) (tons)	1,148	1,175.7	1,007	1,126	985
Total number of catch basins ⁴	814	558	503	569	766
Number of catch basins cleaned	218 ⁴	175	63	71	510
Amount of waste collected from catch basin cleaning (tons)	31.3	20.9	24.2	--- ⁵	43
Industrial and Commercial Sites Not Owned by the MS4					
Number of training events for MS4 staff	3	3	5	1	1
Number of municipal staff trained	11	14	24	14	9

¹ This numeric parameter was added by Tempe to provide a more detailed explanation of the municipal inspection program.

² Number amended after FY2016-2017 report was submitted. Thirteen inspections were conducted at ten facilities.

³ Number amended after FY2013-2014 report was submitted. See Attachment E (2014-2015 Annual Report).

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:	2013 - 2014	2014 - 2015	2015 – 2016	2016-2017	2017-2018
Number of industrial facilities inspected ¹ (see Appendix A, Part V.B)	124	122	126	140	121
Number of corrective or enforcement actions initiated on industrial facilities ¹	2	2	1	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>	1	2	1	3	1
Number of municipal staff trained	5	24	6	29	2
Number of construction/grading plans submitted for review	24	42	26	15	26
Number of construction/grading plans reviewed	24	57	26	15	26
Number of construction sites inspected ³	0	59 ⁴	20	15	19
Number of corrective or enforcement actions initiated on construction facilities <i>(identify the type of actions in narrative summary)</i>	1	2	0	0	0
Post Construction Program Activities					
Number of post-construction inspections completed	1	17	29	28	2

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:	2013 - 2014	2014 - 2015	2015 - 2016	2016-2017	2017-2018
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 2017-2018 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. Staff also assures structures are properly labeled to increase public awareness and reduce potential pollutants.
- Verification of stormwater inventory in parks to provide 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 StormCon.
- Explored 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.
- 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**):
 - The efforts of Tempe's Water Conservation group provide benefit to the stormwater program by reducing chemical products necessary for landscape maintenance and water runoff. The conservation group hosted several workshops throughout the year on xeriscape landscape design, proper maintenance and irrigation, rain water and grey water harvesting. Tempe also offers landscape rebates to single family and multi-family residential properties. One hundred and one (101) rebates were processed in this reporting year. Tempe's conservation website <http://www.tempe.gov/conservation> shares LID information about rainwater harvesting, demonstration gardens and Tempe hosted workshops.

- Participated in [Watershed Management Group Green Living Co-op](#) residential workshops.
- LID was discussed with participants of several tree planting events (Rio Salado + Beach Park Masterplan, <https://www.tempe.gov/city-hall/community-services/parks/rio-salado-and-beach-park-masterplan>)
- Continued development of Tempe Urban Forestry program with LID components www.tempe.gov/urbanforest. The Urban Forestry program provides an emphasis on LID as an important strategy for proper planting in the desert.
- Continued participation with and Tempe is the Chair of the Sustainable Cities Network (SCN) who 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.
- Continued participation in the Specifications and Standards Sub-Workgroup of SCN. The Specifications and Standards Sub-Workgroup continues to develop and collect uniform standards and specifications for a Greater Phoenix Metro Green Infrastructure Handbook addressing alternative stormwater management with low-impact development details to be used throughout the region.
- Partnered with Watershed Management Group and others on pilot LID/GI water harvesting feature to showcase the ability of bioswales and curbcuts to support native plant habitats.

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 2017-2018 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 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 2017-2018 reporting year.

D. Replacement of Existing Control Measures

Tempe is submitting a modification request, as advised by ADEQ in the 2013-2014 Review of Tempe's MS4 Report letter (**Attachment EE**). Tempe requests ADEQ provide notification of their acceptance of this change as specified in permit Section 5.5.(4).

Tempe proposes the following update to an existing control measures:

Tempe's MS4 infrastructure is relatively new and intact, thus the CCTV inspections conducted throughout the permit term have not resulted in significant findings; however, catch basin inspections have resulted in numerous cleaning and maintenance events resulting in tons of debris removal. Tempe proposes to replace the CCTV inspection criteria of 8,000 feet per year with the inspection of at least 360 catch basin inspections per year. This 450% increase of 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. ADEQ, however, recently updated eMaps listing 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 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.

Note: Modifications to monitoring locations will not be implemented without a Permit modification.

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 2017-2018 reporting year. A composite sample was not collected during the Winter Wet Season at TD03 due to equipment malfunctions and the lack of representative storm events. E. coli was not reported at SR08 for the Summer wet season. The laboratory report, stating E. coli data was unusable, was received past the last qualifying rain event for the summer wet season. Due to this, sample recollection was not possible.

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 February 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 (2017-2018) maximum and average by site location.

Below is a summary of findings:

- In the 2017-2018 reporting year there were 21 sampling events; from which 1,285 analytical results were produced. From those results a total of 148 parameters were detected (conventional parameters, microbiological, metals, nutrients), 136 of the parameters were detected at levels <SWQS. There were only 12 SWQS exceedances (for *E. coli*, Copper) which will be discussed more in this section. Overall, there was little significant difference in the results of 2017-2018 compared to previous year's data. There were a few instances where results increased (greater than three times the standard deviation of the average result) when this year's data was compared to previous site averages for the permit term. The increases were for TDS, BOD, Arsenic at SR-05, Antimony at TD-01, TDS, TPH and Oil and Grease at TD-03, Nitrate/Nitrite, 4,6-dinitro-o-cresol, 2,4-dinitrophenol, 4-nitrophenol at KP-01. The values were below SWQS and there was no indication of degradation to stormwater quality from Tempe's MS4.
- For the entire dataset 2011-2018, 67 sampling events were conducted during the winter wet season (November through May during 2011-2018), and 62 sampling events were conducted during the summer wet season (June through October 2012-17).
- Averages for rate, volume, duration, pH, and Temperature for all sites from 2011-2018 sites are as follows:
 - Average Rate (GPM): 2,287
 - Total Volume (gallons): 219,693
 - Duration (mins): 94
 - pH (S.U.): 7
 - 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. KP-01 had the highest TDS and COD. TD-01 had the highest TSS, TD-03 the highest BOD and SR-08 was observed to have the highest value for Hardness.
- 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, TSS, BOD
- 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. Thirty-four percent of the analytes monitored for metals had detections, all results were within the range of what has been detected throughout the permit term with the exception of Arsenic at SR-05 as mentioned above.

Microbiological

- *E. coli* was above the SWQS at each sampling location in seven of the nine sampling events it was measured. Two events were less than 575 MPN, TD-03 during the summer 2017 event and SR-05 during the winter 2018 event.
- *E. coli* concentrations were observed to have a moderate decrease from the permit term average 2011-2017 result (1,691 MPN) to 2017-2018 result (1,318 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 nine sampling events at four of the five sampling locations, SR-08 had two events <SWQS, KP-01 and TD-01 each had one summer event <SWQS.
- With the exception of TD-03, since a winter metals sample wasn't collected to compare, Copper concentrations were observed to be 30- 40 percent lower during the summer events than winter events at each site. Though levels varied among the various sites from 7-28 µg/L in the summer to 22-30 µg/L in the winter. When the 2011-2017 results (average all sites, all

events 18.7µg/L) and 2017-2018 results (average all sites, all events 19.3 µg/L) were compared, there appears to be an insignificant change in overall copper level discharged.

- Although average copper levels have been observed to decrease in the recent sampling period when compared to previous wet seasons during the permit term, 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.

Nutrients

- Average nutrients observed at each site in 2017-2018 demonstrate relative consistency with the results throughout the permit term. 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 2017-2018 reporting period six organic parameters were detected. Alpha-Endosulfan, a pesticide, was detected below the SWQS, near the reporting limit at TD-01. Semi-volatiles 4,6-dinitro-o-cresol, 2,4-dinitrophenol, 4-nitrophenol were detected below the SWQS at KP-01. Total Petroleum Hydrocarbons (TPH) and Total Oil and Grease were detected at TD-03, there are no numeric SWQS for these analyses.
- Of all Organics analyzed throughout the entire dataset (2011-2018) (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 Volatile Organic Components (VOCs) have been detected during the permit term.

- During the 2016-2017 reporting period one organic parameter was detected. Alpha-Endosulfan, a pesticide, was detected below the SWQS, near the reporting limit at TD-01.
- Between the Winter seasons of 2013-2014, seven compounds were detected. The (SVOC) 2,4-dinitrophenol was detected at TD-01 and SR-05 (12/2014), 4-nitrophenol (SVOC) at TD-01 (2/20/13 and 12/4/14), SR-05 (12/2014), TD-03 (12/2014), KP-01 (12/31/14).
- Between 2011-2013, six organic compounds were detected. They were comprised of three Total Oil and Grease detects, which were all observed during the winter wet season and from three different sites (Winter 2012 SR-08 and TD-01, Winter 2013 KP-01). There are no numeric SWQS for these analyses. There were two phenol (SVOC) detects, which occurred in the summer wet season (both from the TD-01, in the summer season 2012) and one diethyl phthalate (SVOC) detect at SR-05, which occurred in the winter wet season 2013.

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 X** 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 (Kiwanis 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 2017-2018 reporting period. *E. coli* was found to be higher than the SWQS at five sites and seven of the nine sampling events. Site TD-03 was below the SWQS in July 2017 as was SR-05 in December 2017. Dissolved copper was found to be higher than the applicable hardness-dependent standard at four sites and five of the nine sampling events. Copper levels have decreased in the recent sampling period when compared to previous wet seasons during the permit term, especially at KP-01 and TD-03, no discernible trends have been identified.

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 2012-2018 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	SSO
Pesticides, algaecides, root killers, and fungicides	Cooling towers
Industrial use of copper	Discharges to POTWs
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 E. coli	
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 - E. coli 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.

There was little significant change in pollutant loads when comparing the 2017-2018 pollutant loading data with the data of previous years. The pollutant loads were in line with the average loadings for the permit term, no loading results for 2017-2018 were greater than three standard deviations of the average results between 2011-2016. Table 13 provides a summary of 2017-2018 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 G054: 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	18.3	1.62	11.64	3.72	27.7	92.9	0.082
COD	54.2	4.80	34.5	11.0	82.1	275	0.24
TSS	81	7.2	52	17	123	413	0.36
TDS	72	6.4	46	15	109	365	0.32
Total Nitrogen	1.5	0.13	0.9	0.30	2.3	7.5	0.0066
TKN	1.07	0.095	0.679	0.217	1.62	5.42	0.0048
TP	0.18	0.016	0.12	0.037	0.28	0.93	0.00082
Antimony	0	0	0	0	0.00074	0.0025	0
Arsenic	0	0	0	0	0	0.0014	0
Barium	0.006	0.0005	0.0036	0.0012	0.009	0.029	0
Chromium	0	0	0	0	0	0.00057	0
Copper	0	0	0	0.00084	0	0.021	0
Zinc	0	0.00075	0	0	0.013	0.043	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, 2017-June 30, 2018 reporting period is conservatively estimated to be \$ \$2,007,592. Funding for the program comes from Tempe's CIP fund, various Public Works 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:

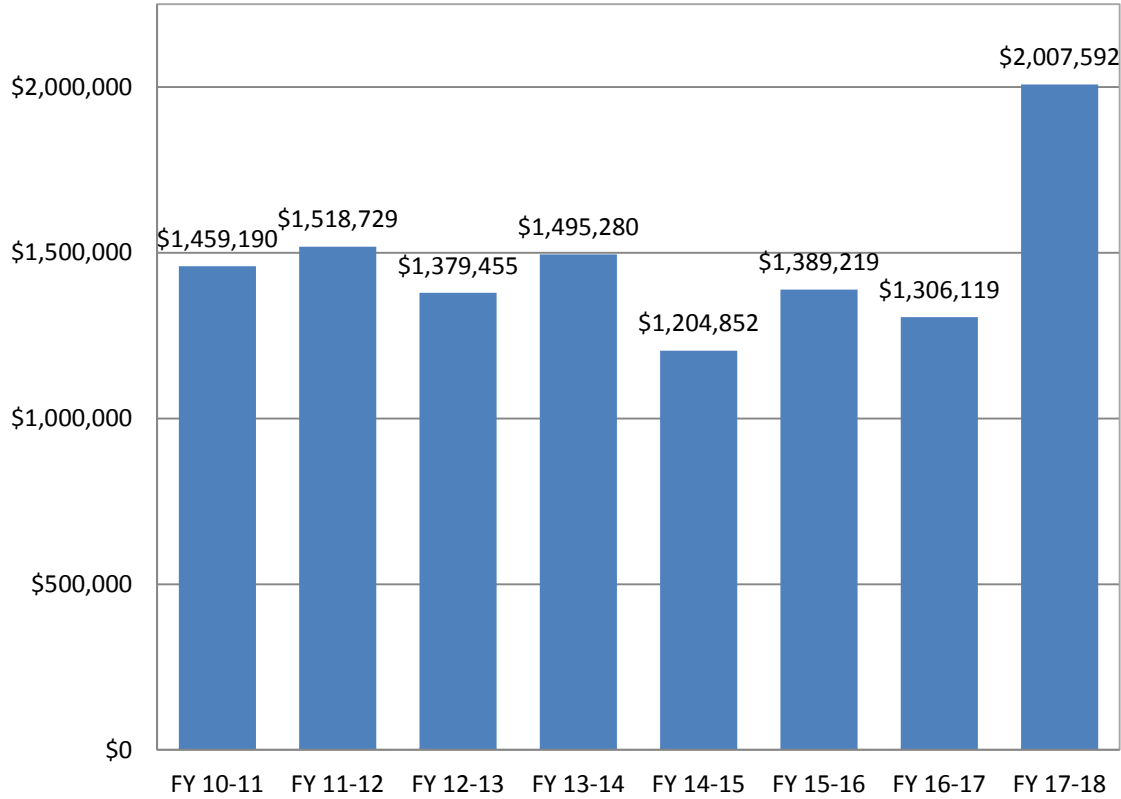
- Public involvement and participation programs are not exclusively related to the stormwater program. Accordingly, stormwater expenditures in these areas were either estimated to be one-half of the total operational budget, or the time and materials specific to stormwater activities.
- Most of the operational 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 an increase over the 2016-2017 reporting year. The following considerations help to explain the overall and specific increase expenditures:

- The significant increase in stormwater costs this reporting period is primarily due to Water Operations Section development of an in-house inspections and cleaning program. There was a one-time cost (\$401,717) for the vector truck vehicle; however, the labor rate expense (\$236,814) of the additional staff will continue as a regular program expenditure.
- There was an increase (\$109,752) in expenditures for wet weather sampling staff and equipment.
- Other incremental increases were seen for HPCC, analytical costs and staff time, industrial inspections program, construction programs (CIP and Private Development) programs, and CCTV.

Figure 2: Fiscal Analysis

MS4 Program Fiscal Analysis



Tempe cannot accurately estimate the scope of budget changes and cost allocations for the 2018-2019 reporting year; however, the city does anticipate expenditures 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

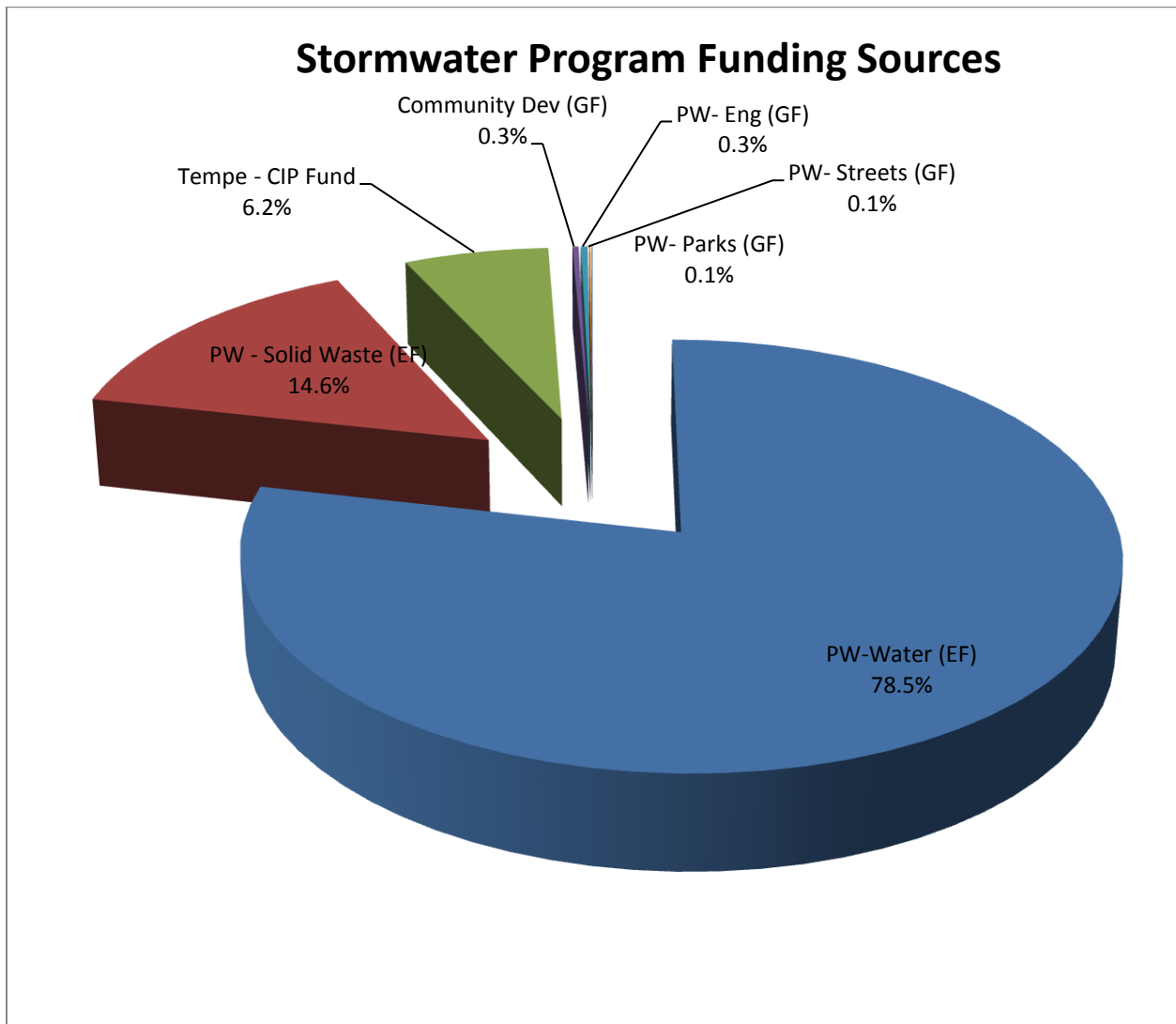
Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Program Administration (annual reporting, SWMP development and implementation, training, etc.)	\$343,990	PW - Water (EF)	1.75 EQS 0.25 EPS
Legal Counsel	\$2,000	PW - Water (EF)	Legal counsel - time
Municipal Facility Stormwater Upgrades and Infrastructure Repair	\$0		
Public Education and Outreach			
Materials	\$2,406	PW- Water (EF)	BMP Brochure Printing/ Promo Material
Memberships	\$2,500	PW-Water (EF)	STORM Dues
Other	\$900	PW-Water (EF)	Outreach Booth for Festival of Arts
Public Involvement and Participation			
Hazardous Mat Safety/HPCC	\$292,690	PW - Solid Waste (EF)	(1/2 HPCC operational expenses)
Adopt-A-Park		PW - Parks (GF)	Operated by volunteers no City staff costs
Adopt-A-Path/Street	\$1,400	PW - Streets (GF)	Full Program Expense
Training (External)	\$2,288	PW - Water (EF)	StormCon
Capital expenses for new, replaced, or repaired stormwater sewers, capital for facility replacement.	\$125,000	Tempe - CIP Fund	Repair and replacement of catch basins
Operational expenses for cleaning and/or repairing stormwater sewers.			
Cleaning / Repair (Internal)	\$236,814	PW - Water (EF)	Staff Time
Cleaning / Repair (Contract)	\$33,323	PW - Water (EF)	
Other expenses / equipment	\$401,717	PW - Water (EF)	Vactor Truck (#149) purchase

Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Engineering Capital Construction Stormwater Program	\$5,925	PW- Eng. (GF)	Staff Time
Private Construction Stormwater Program	\$5,399	CD - DS (GF) Developer Fees	Staff Time
Stormwater GIS development, maintenance, and operations, staff time, etc..	\$19,290	PW - Water (EF)	Staff Time
Inspection / Enforcement (IDDE, Industrial / Commercial, etc.)	\$111,573	PW- Water (EF)	Staff Time & Equipment
Outfall Inspections / Wet weather Sampling	\$154,662	PW- Water (EF)	Staff Time & Equipment
Analytical			
Analytical	\$19,453	PW - Water (EF)	
Staff Time - Chemists	\$16,078	PW - Water (EF)	
CCTV	\$11,200	PW - Water (EF)	Staff Time & Equipment
Parks	\$1,400	PW-Parks (GF)	Staff Time
Streets			
Street sweeping	\$207,584	PW - Water (EF)	4 FTEs-Stormwater Expenditures
Permit Fee	\$10,000	PW - Water (EF)	Permit Fee
Total	\$2,007,592		

*Adopt-A-Park Program is now run entirely by volunteers and no City staff members are involved.

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	Q	Restaurant Inspections
B	STORM Annual Report	R	Non-Filer Notifications
C	Training Sign-In Sheets	S	Construction Inspections
D	ESS ARCA Infrastructure Inspections	T	Tempe City Code
E	MS4 Cleaning Summary	U	Outfall Inspections
F	Parks & Open Spaces Infrastructure	V	Sampling Event Parameters
G	WUD Eng. CCTV reports	W	MS4 Sample Event Tracking
H	Call-out Summary	X	Summary of Monitoring Data
I	Enforcement Documents	Y	Laboratory Reports
J	City of Tempe ERP	Z	Data Trending
K	Municipal Facility Inspections	AA	SWQS Comparison
L	Municipal Facility Chemical Handling and Spill Procedures	BB	Pollutant Loading report
M	Hazardous Waste Management Plan	CC	COT SWMP (Minus Attachments)
N	COT MS4 Pesticide Herbicide Plan	DD	LID Information
O	MSGP- SARA Inventory	EE	2013-2014 ADEQ Letter
P	Industrial Commercial Inspections		