CITY OF TEMPE

2012-2013

ANNUAL PHASE I MS4 REPORT

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

September 2013

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, 2012 – June 30, 2013

D. Stormwater Mgt. Program Contact

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E. Certifying Official

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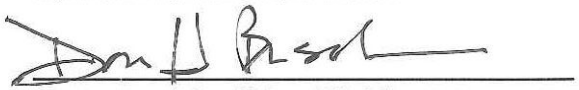
2. Annual Report Certification

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

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



Signature of Certifying Official

Date

3. Narrative Summary of Stormwater Management Program Activities Report

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

A. Public Awareness Activities Including Outreach

Tempe Activities

Tempe has exceeded Permit requirements outlined in Appendix A, Sections I.A and I.B, by coordinating and participating in several public and business sector awareness and outreach activities. During the 2012-2013 reporting year, Tempe has reached 11 target groups totalling approximately 303,642 people and/or businesses while covering a wide array of stormwater topics. In some cases this number includes the same audience, though the stormwater message varies (i.e., Tempe resident messages through *Tempe Today* articles and Tempe businesses through *E-Bulletin* distribution). 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	Number and Type of Materials Distributed	Target Groups
Industrial Facilities	Jul-12 through Jun-13	Stormwater Information for Industrial Facilities	99	BMP Brochures Given to Industrial Facilities During Inspections	Industrial and Commercial Businesses
Municipal Facilities	Jul-12 through Jun-13	Stormwater Information for Residents	5,000	1100 bookmarks and 800 NPS puzzles; 200 each Home Repair; Yard & Garden; Pool, Pet and Auto BMPs at 15 facilities	General Public
Construction Sites	Jul-12 through Jun-13	Stormwater Requirements for Construction Sites	13	All private construction site contractors are educated on stormwater BMPs as a component of the permitting process. Materials include brochures and/or verbal discussion.	Construction Site Operators

Development Community	Jul-12 through Jun-13	Stormwater Requirements for Construction Sites (Planning, Grading, Drainage, etc.)	Unknown	Educational brochures pertaining to stormwater construction site and retention requirements are made available to the development and construction community in the Development Services office.	Development Community & Construction Sites
Tempe Today Article	Aug-12	Storm Event & Pesticide/Fertilizer Usage	44,000	Article in Tempe Today Newsletter Inserted Into Water Bills and On Website	General Public, Residential Community, Industrial, Commercial Businesses
Twitter, Facebook, News-e-list & Channel 11	08/17/2012	Storm Event & Pesticide/Fertilizer Usage	13,000	Facebook (6,000), Twitter (5,000), News E-list (2,000)	General Public
E-Bulletin (3Q2012)	Sep-12	Globally Harmonized System (GHS) & Tempe Stormwater Program Info	126	126 Environmental Bulletins Via E-mail and Posted to Website	Commercial, Industrial Businesses
Tempe Today Article	Sep-12	Stormwater & Car Washing	44,000	Article in Tempe Today Newsletter Inserted Into Water Bills and On Website	General Public, Residential Community, Industrial, Commercial Businesses
Connecting Tempe Newsletter	10/03/2012	Pollution Prevention	12,000	Article in Connecting Today Newsletter promoting Adopt Programs	General Public, Residential Community, Public Participation
Twitter, Facebook, News-e-list , Channel 11	10/04/2012	SWMP Available for Review	13,000	Promoting Availability of SWMP at Hayden Flour Mill Grand Opening	General Public, Residential Community, Public Participation
Hayden Flour Mill Grand Opening	10/05/2012	Stormwater Information for Residents & SWMP Available for Review	1,000	Home Repair; Yard & Garden; Pool; FOG for Homeowners; Pet Waste & Medicine Disposal BMPs Distributed	Downtown/ Town Lake - Residential Community
Tempe Tardeada	10/14/2012	Stormwater Information for Homeowners	1,000	Home Repair; Yard & Garden; Pool; FOG for Homeowners; Pet Waste & Medicine Disposal BMPs Distributed	General Public, Residential Community
GAIN Night	10/20/2012	Stormwater Information for Home Owners	2,000	Home Repair; Yard& Garden; Pet Waste; FOG; Auto and Pool BMPs Distributed	Home Owner Associations; Residential Community
ASU Block Party	10/27/2012	Stormwater Information for Homeowners	200	Home Repair; Yard& Garden; Pet Waste; FOG; Auto and Pool BMPs Distributed	General Public, School, Residential
Zero Waste Challenge	11/17/2012	Stormwater Information for Homeowners	400	BMP Packets: Home Repair; Pet Waste; FOG; Auto; Pool; and Yard & Garden included	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback
Tempe Today Article	Nov-12	Stormwater Copper Pollution and other Stormwater Pollutants	44,000	Article in Tempe Today Newsletter Inserted Into Water Bills and On Website	General Public, Residential Community, Industrial, Commercial Businesses
Twitter, Facebook, News-e-list , Channel 11	11/23/2012	Storm Event & Animal Waste	13,000	Facebook 6,000; Twitter 5,000; News E-List 2,000	General Public

Twitter, Facebook, News-e-list , Channel 11	11/29/2012	SWMP Available for Review	2,000	Promoting Availability of SWMP at Tempe Festival of the Arts	General Public, Residential Community, Public Participation
Tempe Festival of the Arts	11/30/2012-12/2/2012	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	600	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback
E-Bulletin (4Q2012)	Nov-12	Disposal of Used Oil & Tempe Stormwater Program Information	124	124 Environmental Bulletins Via E-mail and Posted to Website	Commercial, Industrial Businesses
Tempe Today Article	Jan-13	Adopt-Programs & Pollution Prevention	44,000	Article in Tempe Today Newsletter Inserted Into Water Bills and On Website	General Public, Residential Community, Industrial, Commercial Businesses
Connecting Tempe Newsletter	*01/18/2013*	*Pollution Prevention*	*12,000*	*Article in Connecting Today Newsletter promoting Adopt Programs*	*General Public, Residential Community, Public Participation*
E-Bulletin (1Q2013)	Feb-13	Disposable Wipes, Backflow Program Changes & Tempe Stormwater Program Information	120	120 Environmental Bulletins Via E-mail and Posted to Website	Commercial, Industrial Businesses
Tempe Today Article	Mar-13	Safe Disposal of Pharmaceutical & Adopt Program Info	44,000	Article in Tempe Today Newsletter Inserted Into Water Bills and On Website	General Public, Residential Community
Twitter, Facebook, News-e-list , Channel 11	04/04/2013	SWMP Available for Review	7,100	Promoting Availability of SWMP at Tempe Festival of the Arts	General Public, Residential Community, Public Participation
Tempe Festival of the Arts	April 5-7, 2013	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	400	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback
3TV Safety Event	4/27/13	Stormwater Information for Homeowners	200	BMP Packets: Home Repair; Pet Waste; FOG; Auto; Pool; and Yard & Garden included	General Public, Residential Community
E-Bulletin (2Q2013)	May-13	Update to Enforcement Response Plan & Tempe Stormwater Program Information	120	120 Environmental Bulletins Via E-mail and Posted to Website	Commercial, Industrial Businesses
Welcome to Downtown/ Tempe Town Lake Brochure	Jun-13	Stormwater Information for Restaurants & Businesses Downtown	140	Brochures to Restaurants and Downtown Tempe Community Assoc.	Downtown Tempe Businesses, Restaurants
			303,642	**Estimated annual total of people or businesses reached through 29 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.

- During the 2012-2013 reporting year, Tempe participated with ADOT, Maricopa County, Pima Association of Governments, and the City of Phoenix on the development of the first ever Arizona MS4 Summit. The summit was intended to bring Phase I and Phase II MS4s together to learn more about each other's programs, provide networking opportunities, ask and answer questions and share information. The summit was successfully held on June 18, 2013. Topics presented and discussed included enforcement, audits, the new Construction General Permit (CGP), Low Impact Development (LID), and watershed approaches to MS4 regulation. Three presentations were specific to Tempe programs.

- The City of Tempe is a 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, and 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 STORM organization is composed of 23 members and benefits small, medium and large municipalities throughout the greater Phoenix metropolitan area. It has brought together the experience and resources of Phase I MS4s, including Phoenix, Mesa, Tempe, Glendale, Scottsdale and Arizona Department of Transportation (ADOT) with Phase II MS4s of Apache Junction, Avondale, 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, Surprise, Tolleson and Youngtown. All members are encouraged to participate in meetings that are held on the third Tuesday of each month.

  STORM key accomplishments for fiscal year 2012-2013 include the following:

  - Continue to use "Only Rain in the Storm Drain" motto, expressing a common regional theme that is easily understood and clearly communicates the essential message of keeping pollutants out of the storm drain system.

- Maintain the web site located at http://www.azstorm.org, which relays the STORM message in both English and Spanish. Details of web site activity are included in the FY 2013 STORM annual report on page six, which shows a total number of 2,737 hits on the site during the period from July 2012 through June 2013. The website is updated as needed.

- Movie Theater Campaign – This campaign ran from December 14, 2012, to January 10, 2013, to correspond to the winter "wet season." Prior to movies at seven AMC theaters in the metropolitan Phoenix area, digital slides were shown on 131 movie screens averaging five movies per day, for a total estimated distribution of 655 movies per day, 4,585 movies per week, and 18,340 movies over campaign course reaching approximately 680,000 movie viewers.

- Radio Campaigns – This campaign included Public Service Announcements about pool discharges and aired on eight radio stations from June 3 to 30, 2013, with 134 paid spots, 82 "bonus" no-charge spots, and a community service interview in English and Spanish. It is estimated that these messages reached more than 3.25 million listeners, including: 1,307,900 ages 12-17; 1,218,800 ages 18-24; and 742,900 ages 25-43.

- Seminar – LID Basics and Beyond: Low Impact Development Trends in the Southwest. STORM provided funds for sponsorship at the event, which took place on February 5, 2013. There were 122 attendees at the workshop. Resources are available at http://sustainablecities.asu.edu/members/meetings/lid-basics-and-beyond-low-impact-development-trends-in-the-southwest-workshop-resources/.

- On June 18, 2013, STORM and Arizona Department of Transportation held a Statewide MS4 Summit. ADOT provided the seminar room at no charge, and STORM provided monetary sponsorship. The seminar featured presentations by member municipalities and state and county agency representatives regarding enforcement on MS4 permittees, the 2013 Construction General Permit, Low Impact Development (LID), and Watershed Approaches to Treatment. The presentation and handouts from the seminar are posted on the website at http://www.azstorm.org/construction-seminar/maricopa-county-stormwater-construction-seminar#ms4summit.

- On June 20, 2013, STORM and the Arizona Department of Transportation held an Industrial Stormwater Compliance Seminar. ADOT provided the seminar room at no charge, and STORM provided monetary sponsorship. With 84 attendees, this seminar featured presentations on how to comply with Arizona's

Multi-Sector General Permit for stormwater discharge from industrial facilities. The topics covered included: visual assessments, routine self-inspections, training, record keeping and enforcement. The presentation handouts from the seminar are posted on the website at http://www.azstorm.org/construction-seminar/

- Display boards continue to be used at community outreach events to convey to the public the difference between the sanitary and storm sewer systems, including suggestions for avoiding adding pollutants to the stormwater system. The display boards were utilized by STORM members at 126 events listed in Attachment C of the FY2013 STORM annual report. Two new sets of display boards were purchased in 2013. Table banners continue to be used during the fiscal year to depict the STORM name, logo and website.

- Promotional items purchased in 2013 include: pet waste bags(10,000 at cost $16,038.58), magnetic notepads (2,500 at cost $1,604.14), slap bands (10,000 at $6,498.12) and grocery bags (2,500 at $2,340.62), for total spent on promotional items of $26,481.46.

- Printed materials – STORM had a new stormwater brochure designed and printed about storm drains. During fiscal year 2013, approximately 15,000 brochures were printed and distributed to members and at STORM events. A construction brochure developed in 2010 continues to be distributed, as well.

The Fiscal Year 2012 STORM annual report is included as **Attachment B**.

B. Public Involvement Activities Including Outreach

"Adopt-A" and Other Volunteer Programs

Tempe implements various City "Adopt-A" (street, alley, 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 2,159 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

During the 2012-2013 reporting year, Tempe reintroduced a storm drain catch basin labeling program. Efforts during the reporting year resulted in the application of 621 labels.

Table 2 summarizes the number of events that occurred during the 2012-2013 reporting year, number of participants, amount of trash removed, and number of labels applied.

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

Adopt Events	Events	Volunteers or Community Service Workers Involved	Bags of Trash Removed
Tempe Adopt-A-Street	5	27	14
Tempe Adopt-A-Park/Other Volunteer Programs	17	264	110
Tempe Adopt-A-Path	103	1,727	2,035
Totals	**125**	**2,018**	**2,159**
Other Volunteer Events	**Events**	**Volunteers Involved**	**Labels Applied**
Tempe Storm Drain Catch Basin Labeling	**3**	**83**	**621**

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 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 2012-2013 reporting year, Tempe advertised and conducted three events. See Table 1 for details. Tempe will continue this approach during the 2013-2014 reporting year. Additionally, Tempe is holding a series of open meetings to roll out the City's draft 2040 General Plan (GP2040). GP2040 describes some of the stormwater pollution prevention programs that Tempe implements, and public meetings provide residents with an opportunity to comment.

Parks

Tempe's Parks Maintenance Section continues to maintain 65 "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 actively 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 events can be found in Section 3.C of this report. Means of reporting are as follows:

- 480-350-2811
- http://www.tempe.gov/stormwater
- 480-350-4311
- http://www.tempe.gov/311
- 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 detailed 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. 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:

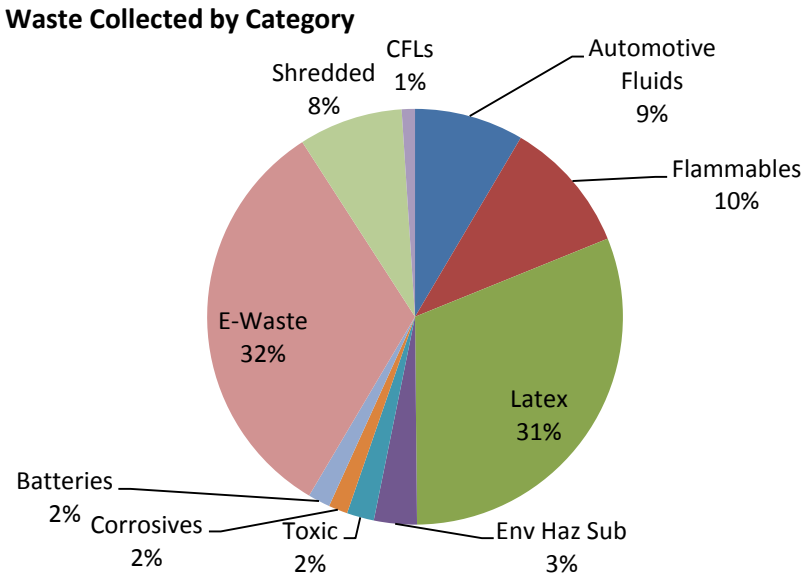
- http://www.tempe.gov/index.aspx?page=188

Table 3 summarizes HPCC events during the 2012-2013 reporting year.

Table 3: Summary of HPCC Activities

Number of Days Open to the Public	Number of People that Utilized HPCC Services	Amount of Household Hazardous Waste Collected
104	8,441	370,738 pounds

Below is a breakdown of waste collected, of which 92% was recycled.



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

Tempe's 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 2012-2013 reporting year, Tempe maintained a staff of seven Environmental Compliance Inspectors. All inspectors are cross trained in pretreatment, cross connection, and stormwater inspections. During the 2012-2013 reporting year, stormwater training for this group consisted of 11 separate training events attended by nine employees (seven Environmental Compliance Inspectors, one Environmental Compliance Supervisor, and one Environmental Quality Specialist). Training focused on IDDE, various MSGP Sectors, and Good Housekeeping Pollution Prevention, and was attended by all Tempe inspectors who currently conduct inspections and enforcement. Much of this training was provided in webinar format by National Stormwater Center (http://www.npdes.com/). Additionally,

one Environmental Compliance Supervisor attended the National Stormwater Center's Certified Stormwater Inspector Training. As an efficiency measure, Tempe's Water Quality Specialists have been assigned to assist with outfall screening practices beginning in the 2013-2014 reporting year. Accordingly, all Water Quality Specialists also received IDDE training during the 2012-2013 reporting year.

Of the 245[1] Tempe employees who received training during the 2012-2013 reporting year, approximately 123 non-Environmental Services field employees received Municipal Facility training that included the identification and reporting of illicit and non-stormwater discharges. IDDE topics were discussed during these Municipal Facility training events, though are not specifically categorized as IDDE training for purposes of this report. See Section 3.K of this report for a summary of training events, number of employees trained, and topics discussed. See **Attachment C** for copies of training sign-in sheets.

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

Outreach – Pollution Prevention

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

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 five City workgroups: Environmental Services, Parks Maintenance, Streets, Water Engineering, and Utility Services. 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 will be 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 4th of July festivities and the Tempe Arts Festival. See Section 3.G of this report for a description of the ARCA. During the 2012-2013 reporting year, two ARCA area

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

catch basin inspection events occurred. As a result, 40 catch basins were inspected, of which 19 were referred for cleaning.

Environmental Compliance Inspectors also conducted 20 additional infrastructure inspections in various other sections of the city as a result of calls or complaints. Many of these inspections resulted in the deployment of cleaning measures.

As mentioned in Section 3.B, during the 2012-2013 reporting year, Tempe reintroduced the storm drain catch basin labeling program. Each catch basin that was labeled was also inspected and scheduled for cleaning if needed. This effort resulted in the inspection of 621 catch basins and numerous cleaning events.

A numeric summary of these inspection 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 contracted cleaning events and reports is included as **Attachment E**.

- Tempe's Parks Maintenance 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 2012-2013 reporting year, the Tempe Parks Maintenance Section inspected 276 pieces of City stormwater infrastructure including catch basins, inlet structures, drywells, bubbler boxes, and retention basins. Of the 276 inspections, 49 assets were referred for cleaning. A numeric summary of inspections and cleaning events can be found in Table 4. Inspection forms are included as **Attachment F**. A summary of contracted cleaning events is included as **Attachment E**.

- Tempe's Street Maintenance Section is, in part, tasked with the maintenance and cleaning of Tempe streets and various other MS4 components, including street sweeping and routine infrastructure inspections. 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 2012-2013 reporting year, Tempe cleaned approximately 21,888 linear miles of streets, effectively removing approximately 937.4 tons of debris. A numeric summary of these events can be found in Table 4.

Streets Maintenance also conducts visual inspections of catch basins and other similar infrastructure. During the 2012-2013 reporting year, this section completed inspections of 90 catch basins along 125.2 miles of Tempe owned and maintained roadway. Of the 90 catch basins inspected, five were referred for cleaning. A numeric summary of these events can be found in Table 4. Inspection forms are included as **Attachment G**.

In addition to the inspections and cleaning outlined above, two additional street programs are used to conduct infrastructure inspections. Structures located on arterial roadways are inspected as part of the City's right-of-way weed control program and structures located on streets other than arterials are inspected as part of the City's street sweeping program. These inspections are not specifically documented unless further detailed inspection or cleaning is deemed necessary.

- Tempe's Water Utilities Division, Water Engineering Section, currently operates one sanitary sewer 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. When available, this crew also conducts MS4 CCTV inspections. During the 2012-2013 reporting year, Tempe inspected 9,330.9 feet of underground MS4 conveyance. Inspection records are included as **Attachment H**. Roughly half of the inspected areas were found to be in good condition, while the remaining areas required cleaning due to debris build-up. Linear mileage cleaned, removed debris, and CCTV activities are summarized in Table 4.

- Tempe's Water Utilities Division, Utility Services Section, is responsible for the operation and maintenance of Tempe's water and wastewater infrastructure. On occasion, this section is also requested to perform unique stormwater-related cleaning or maintenance activities. During the 2012-2013 reporting year, this section was not called upon for stormwater related inspections or cleaning.

Table 4: Summary of MS4 Infrastructure Inspections and Cleaning

Location/Description	Infrastructure Inspected		Infrastructure Cleaned		Amount of Debris Removed
	Number	Miles	Number	Miles	Tons
ARCA	40	-	197	-	27.8
Environmental Services (other)	641	-		2	
Parks/Common and Rec. Areas	276	-		-	
Streets (excluding street sweeping)	90	125.2		-	
Pipe (CCTV)	-	1.8		-	
Utility Services	-	-	-	-	-
Streets (including street sweeping)	-	-	-	21,888	937.4
Totals	**1,047**	**127**	**197**	**21,890**	**965.2**

Note: Infrastructure includes catch basins, drywells, bubbler boxes, inlet structures, streets, conveyance pipes, etc.

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. Of the 45 call-outs that Tempe's Environmental Services Section received, 37 were either directly or indirectly related to stormwater concerns. All calls were responded to and investigated. A summary of all call-outs pertaining to these reports can be found in **Attachment I**. 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
37	37	100	37	100

Inspections – Municipal, Industrial, Commercial, Outfall

Tempe's stormwater inspection program for municipal, industrial, and commercial facilities is an important component of the IDDE program. Aside from identifying and eliminating discharges, these inspections compel the use of stormwater 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 an important 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 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 discharges are not subject to further investigation. If the 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 soon 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 2012-2013 reporting year, all discharges were identified through physical investigations and/or field screening, or characterized through laboratory analysis.

Tempe Environmental Compliance Inspectors identified the following as a result of 66 outfall inspections, 122 industrial/commercial inspections, 21 restaurant inspections, and 37 call-outs:

- Twelve outfall discharges from five outfalls were determined to not be sources of pollutants. Further information can be found in Section 3.H of this report.

- Twelve potential or actual illicit discharges to the MS4 resulted in the issuance of 12 official violation warning letters. Of the 12 violation warning letters, three were issued to domestics sources, four were issued to restaurants, one was issued to a construction site operator, one was issued to a special event coordinator, and three were issued to industrial/commercial businesses. Note that violation warnings are now issued in accordance with Tempe's Enforcement Response Plan and points are assessed to the discharger. See **Attachment J**.

- One illicit discharge to the MS4 from a commercial source resulted in the issuance of a Notice of Violation. Note that notices of violation are now issued in accordance

with Tempe's Stormwater ERP, and points are assessed to the discharger. Point accumulations are used to calculate civil penalties consistently. **See Attachment J**.

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
Outfalls	66	12 dry weather flows (determined to not be a significant source of pollutants.)
Industrial/Commercial (non-restaurant)	122	One (1) NOV, 12 Violation Warning Letters, 23 Minor Corrective Actions or BMP Suggestions
Restaurant	21	
Call-Out	37	
Catch Basins and Other Infrastructure	681	197 Infrastructure Cleaning Events
Total	**927**	

D. Municipal Facilities

Inventory

The total number of municipal facilities remains at 143. 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.

As a result of the 2012 audit described in the 2011-2012 annual report, all facilities were reviewed for potential reclassification to allow for a stronger emphasis on sediment control, storage practices, site activities, and general housekeeping. Ranking criteria was modified to accommodate this focus, but no changes were made in facility classifications because impacted facilities were already classified at a higher level. Table 7 summarizes the municipal facility inventory prioritization.

Table 7: Summary of Priority Municipal Facilities

Department/ Division	Priority #1 Facilities	Priority #2 Facilities	Priority #3 Facilities	Number of Facilities
PW-Water	3	11	16	30
Fire	1	8	1	10
Parks	4	3	57	64

Community Services	0	6	11	17
Transportation	1	3	0	4
Police	0	4	2	6
PW-Other	3	0	0	3
Miscellaneous	0	2	7	9
Totals	12	37	94	143

All Priority #1 facilities are on a biannual inspection schedule. Priority #2 facilities will be inspected every three years and Priority #3 facilities will be 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.

Inspections

Consistent with Tempe's Municipal Facility Stormwater Inspection Program, Tempe inspected and prioritized all 143 sites over the previous reporting years. In the 2012-2013 reporting year, 59 inspections were conducted at 48 facilities.

Table 8 summarizes all 2012-2013 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
Priority 1	12	8	15	67
Priority 2	35	11	15	31
Priority 3	96	29	29	30
Totals	**143**	**48**	**59**	**34**

In January 2013, six facilities were temporarily moved to a quarterly inspection frequency as a result of BMP needs. All six of these facilities handle bulk earthen materials (sand, loam, mulch, soil mixtures, etc.).

Two facilities required follow-up actions. These sites were required to upgrade storage practices and housekeeping procedures. The *Results* section below summarizes and highlights inspection actions and facility improvements during the 2012-2013 reporting period.

Results

Results and/or activities and control measures implemented as a result of the 59 inspections conducted in the 2012-2013 reporting year are as follows:

- All inspected facilities that store any single container exceeding five (5) 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) which requires the proper handling, storage, transport and disposal of hazardous wastes associated with municipal operations and facilities. The HWMP was updated on May 11, 2011, to include practices to minimize exposure of hazardous waste to precipitation. This plan was most recently reviewed on December 19, 2013, and June 25, 2013.

- During facility inspections, basic stormwater awareness practices are discussed with facility representatives. These discussions are separate and in addition to formalized stormwater training.

- The Kyrene Utilities Facility required a follow-up/re-inspection that continued into the 2013-2014 reporting year. This facility found that the site's equipment wash area was being overwhelmed with sediment from field operations. Short term measures were put into place until an expanded facility can be designed and constructed.

- The Hardy & Fifth Street Maintenance Facility required a follow-up/re-inspection that continued into the 2013-2014 reporting year. The facility required modifications to bulk material practices and the City made significant improvements to these practices. Hardy & Fifth Maintenance had a new equipment wash area installed in the spring of 2013.

- The Rolling Hills Maintenance Facility has continued facility upgrades during the reporting period. The entire maintenance facility (0.95 acres) is now either covered with buildings, pavement or permeable recycled asphalt pavement (RAP). An equipment wash area was completed at the end of December 2012. All vehicles as well as all sprayers and fertilizers are stored under cover. The bulk materials (sand, loam, mulch, dirt) storage bins were constructed and operational by mid-summer 2012. All old equipment has been removed.

- The Ken McDonald Maintenance Facility continued facility upgrades. Old equipment has been removed and overall storage and housekeeping has improved significantly.

- The Tempe Sports Complex continues facility upgrades. All fertilizer storage has been moved indoors.

- The Kiwanis Park Maintenance Facility continues facility upgrades. Equipment storage and expanded bulk storage is currently being planned.

- The Diablo Maintenance Facility made significant improvements during this reporting period. Upgrades in equipment storage, fertilizer storage, bulk materials storage, herbicide storage, signage and storm drain filters were among the improvements. Upgrades will continue into the next reporting period.

Chemical Handling, Storage, Disposal Practices, and Spills

Several Permit sections require various plans, documents, or procedures ensuring 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 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 and was developed by representatives from Environmental Services, Risk Management, and HPCC. This document is included as **Attachment L**.

  One municipal facility spill incident was reported to the Environmental Services Section during the 2012-2013 reporting year. On June 29, 2013, a Diesel Exhaust Fluid (DEF) spill occurred at the East Valley Bus Operations and Maintenance (EVBOM) facility. DEF contains a urea component that is a mild irritant to skin, eyes and mucous membranes. The spill, estimated at approximately 55 gallons, occurred on a concrete surface, where it flowed to an on-site stormwater catch basin. The flow did not go beyond the catch basin. A City of Tempe contractor cleaned the spill

and all spilled material was recaptured. The cause of the incident was a valve failure. Measures have been taken to prevent further spills. All internal spill reporting procedures were followed, which allowed for quick response and mitigation.

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.

- **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 also maintains Tempe's Hazardous Waste Management Plan (HWMP). The HWMP was updated on May 11, 2011, to include practices to minimize exposure of hazardous waste to precipitation. This Plan was most recently reviewed on December 19, 2012, and June 25, 2013. No changes were needed. This review was conducted by Tempe's Environmental Health and Safety Supervisor and an Environmental Quality Specialist (EQS) from Environmental Services. The HWMP is included as **Attachment M**.

In addition to these responsibilities, HPCC staff provided assistance with various municipal facility stormwater BMP needs during the 2012-2013 reporting year.

- **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.

- **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 has significantly reduced the amount of pesticides and herbicides used by employing integrated pest management practices. However, when pesticide and/or herbicide use is needed, established application best management practices are implemented. These practices were developed by Tempe-certified applicators and Tempe's Environmental Services Section in 2011. A copy of this plan is included as **Attachment N**. The plan is reviewed annually by a Parks Maintenance Section representative.

- Tempe's Parks Maintenance 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 can 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, aeration 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 best management practices.

- Tempe maintains Areawide AZPDES Pesticide General Permit 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.

MSGP (and other AZPDES) Tracking

Two Tempe-owned and/or operated facilities currently maintain coverage under the MSGP, and two additional facilities 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. Tracking of MSGP and all other ADEQ and EPA regulatory requirements occurs electronically through a compliance management solution known as Intelex (http://www.intelex.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, and the map title. These maps were created with existing mapping capability and will be updated to reflect changes and Permit requirements where needed. A status of "fourth year annual report" mapping capability is provided later in this section. During the 2012-2013 reporting year, no maps required update. All maps are maintained 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
Identification and mapping of waters of the U.S. (including Tempe area canals) that may receive discharges from the MS4	2010-2011	Tempe MS4 Surface Waters
An up-to-date map or map(s) showing MS4 boundaries.	2010-2011	All Maps
An up-to-date map or map(s) showing locations where Tempe's storm sewer discharges to waters of the U.S.	2010-2011	Tempe MS4 Monitoring and Discharge Locations, Tempe MS4 Drainage System
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).	2010-2011	KP-01, SR-05, SR-08, TD-01, TD-03 Stormwater Monitoring Location Fact Sheets
Map of all major outfalls and other field screening points.	2011-2012	Tempe MS4 Major Outfalls
Map of facilities owned or operated by the MS4 that have the potential to discharge pollutants to waters of the U.S.	2010-2011	Tempe MS4 Municipal Facilities
An up-to-date drainage system map.	2010-2011	Tempe MS4 Drainage System
Drainage Basins	2008-2009	Tempe MS4 Stormwater Basins
ARCA	2007-2008	Tempe ARCA

- **Linear Drainage Structures**

Line layer showing the location of all stormwater system pipes and the direction of stormwater flow.

Status: Tempe's mapping system currently maintains this capability and is part of the maintenance process of mapping Engineering Division as-builts. Changes to stormwater pipes and flows outside of the Engineering construction and as-built

processes will need to be identified and linked as well. If needed, modifications are expected to be minimal alterations or adjustments.

- **Storm Drain Inlets and Catch Basins**

  Point layer showing the location of all storm drain inlets and catch basins.

  Status: Tempe's mapping system currently maintains this capability and is part of the maintenance process of mapping Engineering Division as-builts. Changes to storm drain inlets or catch basins outside of the Engineering construction and as-built processes will need to be identified and linked to. If needed, modifications are expected to be minimal alterations or adjustments.

- **Outfalls**

  a) *Point layer showing the location of all outfalls.*
  b) *Polygon layer showing the drainage area associated with each of the monitored outfalls identified in Table 1 of the Permit.*

  Status: 90 percent complete. Some fine tuning is needed to make this into an active GIS mapping maintenance process as well as identifying and linking to triggers when outfalls are created, altered, or removed. The expected completion date is March 31, 2014.

- **Detention/Retention Basins**

  Point or polygon layer showing the locations of all identified City-owned retention and detention basins that are connected to the municipal stormwater conveyance system (i.e., that receive drainage from or discharge to a stormwater conveyance).

  Status: 99 percent complete on an interim system. A redesigned system that is part of the mapping maintenance process and linked to business activities outside of Engineering construction and as-built processes will need to be developed. The expected completion date is June 30, 2014.

- **Jurisdictional MS4 Boundary**

  Line or polygon layer showing the jurisdictional boundaries of the MS4, including any new land annexations during the Permit term.

  Status: Tempe's mapping system currently maintains this capability and is part of the mapping maintenance processes. If needed, modifications are expected to be minimal alterations or adjustments.

Tempe is also required to complete a study that evaluates the cost, method, and time it will take to complete future potential mapping requirements outlined in Appendix A, Section IV.E (second measurable goal). Results of this evaluation will be provided no later than the fourth year annual report.

E. Industrial Facilities

Status of Identification and Inventory of Industrial/Commercial Facilities

The City of Tempe Environmental Services Section has developed an 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(d)(2)(iv)(C);
- Industrial facilities subject to MSGP requirements, including those facilities that have submitted a no exposure certification; and
- Other industrial and/or commercial sources (or categories of sources) Tempe determines are contributing a substantial pollutant load to the MS4.

The inventory for SARA Title III and MSGP Facilities was developed by acquiring information from the following sources (See **Attachment O** for listing of these facilities):

- Arizona State Emergency Response Commission – (Tempe facilities subject to SARA Title III) – 149 Facilities
- InfoGroup, Government Division – ReferenceUSAGov Data Base (Tempe facilities subject to MSGP as identified in 40 CFR 122.26[b][14][i,ii,iv-ix, xi]) – 702 Facilities

Other sources used to identify industrial and/or commercial sources (or categories of sources) Tempe determines are contributing a substantial pollutant loading to the MS4 are:

- Utility billing records
- Multi-media inspections conducted by Environmental Compliance Inspectors

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.

Overview of Inspection Findings and Significant Findings

Tempe Environmental Compliance Inspectors conducted stormwater inspections at 122 industrial/commercial facilities subject to SARA Title III, MSGP, and Industrial Pretreatment requirements; and 21 restaurants. Restaurants were inspected for compliance with stormwater requirements along with other regulatory program requirements. As a result of these inspections and call-out inspections, findings ranged from minor to significant. Minor findings, such as inadequate use or lack of BMPs, or inadequate material/chemical storage, rarely resulted in enforcement escalation and were usually quickly addressed by the inspected entity. The most significant findings related to illicit discharges of grease, oil, paint, contaminated wash water, or non-stormwater, and improper storage of chemicals, oils, and grease. These findings resulted in the corrective and enforcement actions discussed below. Industrial/commercial inspection documentation and restaurant inspection documentation are included as **Attachment P** and **Q**, respectively.

Corrective and Enforcement Actions Needed & 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. As a result of inspections conducted during the 2012-2013 reporting year, Tempe inspectors required 23 minor corrective actions. These findings are generally documented on inspection forms.

Findings requiring formal enforcement due to illicit discharges, ignored warnings, or inadequate BMPs that pose an imminent threat to the MS4 resulted in the issuance of one NOV and 12 violation warning letters. See **Attachment J** for violation warning letters and NOVs.

In addition to addressing minor and major deficiencies, Tempe inspectors regularly provide facilities that may require coverage with ADEQ information. During the 2012-2013 inspection year, Tempe identified 47 facilities to which the MSGP may be applicable but for which a demonstration of coverage was not provided. Tempe provided ADEQ with information for these potential non-filers on January 8, 2013, and July 12, 2012. 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 Division and 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 2012-2013 reporting period, Tempe has reviewed and inventoried 100 percent of all construction projects meeting the land disturbance criteria. As of June 30, 2013, Tempe identified 13 private development projects and no CIP projects requiring review inventory, prioritization, and inspection.

Inspection Findings

During the 2012-2013 reporting year, Tempe conducted 24 stormwater inspections of qualifying construction sites. 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. As a result of Engineering inspections, eight minor corrective actions were required. These actions are described below. Inspection documents are included as **Attachment S**.

Corrective Action and Enforcement

Three inspections resulted in eight minor corrective actions. Consistent with internal procedures for progressive action, these corrective actions resulted in verbal notifications to the construction site representative and were corrected while the inspector was on-site. Escalated enforcement was not required. Corrections consisted of the following:

- construction entrance stabilization maintenance (two instances)
- silt fence maintenance (two instances)
- washout facility maintenance
- storm waddle maintenance
- wash-down area maintenance
- downstream drain inlet protection maintenance

One violation warning letter was issued by the Environmental Services Section to a construction site operator for an illicit discharge. **See Attachment J**.

No non-filers were identified. The Tempe Engineering Division requires proof of ADEQ's CGP AZPDES NOI Authorization from the project's owner or developer prior to issuance of a grading and drainage permit, and, therefore, does not anticipate the identification of non-filers.

Training

Stormwater training events for employees directly involved with construction activities occurred on December 27, 2012, and April 10, 2013. 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 Best Management Practices (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 more dense 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 best management practices 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 12 months after completion of construction. The inspections provide an opportunity to identify corrective action 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

Three qualifying 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. Post-construction inspection documents are included as **Attachment S**.

New or Revised Post-Construction Requirements

Since Tempe's last annual report, there have been minor City code modifications that impact post-construction requirements related to permits the City issues. These modifications are described in Section 3.I of this report. 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 ordinances contain 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

As a result of the 2012 MS4 Audit, Tempe developed an IDDE Program Guidance Manual to bring consistency and clarity to procedures involved during outfall inspections and investigations. During the 2012-2013 reporting year, Tempe conducted three detailed IDDE training events that focused on conducting dry weather screening events and source investigations. A total of 14 employees were trained, including Environmental Compliance Supervisors, Environmental Inspectors, and Water Quality Specialists.

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.

Of these 42 major outfalls, 19 are identified as priority 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 changes 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.

Inspection Tracking System

All major outfalls are inspected annually, and all priority outfalls are inspected semi-annually. If prohibited discharges are identified, inspection frequencies may be increased to quarterly. Water Quality Specialists and Environmental Compliance Inspectors are assigned to designated outfalls. Beginning in the 2013-2014 reporting year, Water Quality Specialists are responsible for dry weather screenings at assigned outfalls at the required frequencies. If field screening procedures trigger the need for investigation, an Environmental Compliance Inspector will conduct an inspection. Once screenings and inspections are completed, field data forms and investigation forms are provided to the Environmental Compliance Supervisor for review, after which all forms are scanned, entered into Tempe's document tracking system, and separately provided to an Environmental Quality Specialist for MS4 Permit tracking and reporting.

Inspection and Screening Procedures

Outfall inspections are conducted utilizing 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. Below is a summary of procedures:

- *Initial*

  For each outfall or field screening point location, the following information is recorded on an individual outfall inspection form:

  1. General Information:
     a. Date and Time of Inspection
     b. Name of Inspector
     c. Outfall Location/Description
        i. Outfall ID and description (MH, channel, outfall, etc.)
        ii. Location description if not an outfall (GPS Coordinates)
        iii. Diameter

d. Time since last measurable rain event and approximate amount (> or < 72 Hours)
e. Watershed Use (industrial, commercial, residential, etc.)

2. Estimated Flow Rate (if flow exists)
3. If flow does not exist, as many visual and olfactory observations are completed as possible.
4. If flow exists,:
   a. All visual and olfactory observations are completed
   b. Field Analysis is conducted
   c. Determination if flow is illicit or a significant source of pollutants
      i. If illicit or a significant source of pollutants, outfall inspection form is completed and investigation is initiated.
      ii. If not illicit or a significant source of pollutants, findings are documented (i.e. tail water, TTL bypass, dechlorinated pool backwash, etc.)
5. Outfall inspection form is completed and determination is made whether follow-up or increased inspections are needed(quarterly or semi-annual).

When flow is present during an outfall inspection, an estimation of flow rate and physical/chemical observations and field analysis are required. The parameters in Table 10 will be observed or field tested and documented:

Table 10: Field Screening Parameters

Parameter/ Analyte	Method*	Trigger*
Color	Visual	"Off-Color"
Odor	Olfactory	Chemical, gas, sulfur, etc.
Clarity	Visual or Field	Highly Turbid
Floatables/Oil	Visual	Presence of solid or liquid floatables or sheen
Stains/Deposits	Visual	Presence
Biological Growth	Visual	Excessive growth, death, etc.
Temperature	Field	Hot or cold compared to ambient
pH	Field	< 6.5 or >9 S.U.
Total Chlorine	Field	>0.02 ppm, >4 ppm, depending on SWQS
Copper	Field	Presence
Phenol	Field	Presence
Detergents	Field	Presence

*Methods and Triggers are detailed in Tempe program guidance documents.

- *Follow-up Action*

  Any flow for which the discharge is not known or at least one analytical trigger is exceeded is assumed to be illicit or containing a significant source of pollutants and is screened again for verification.

  If, upon the second screening, the flow remains or the analytical trigger is still exceeded, a source identification investigation is initiated. A discharge source investigation form is used to document findings.

  If, upon the second screening, the flow is absent and/or the analytical trigger is no longer exceeded, a screening follow-up will occur at the same location within three months. If the three-month follow-up screening does not detect flow or a trigger exceedance, routine screenings at this location will resume. If the three-month follow-up indicates flow or an analytical trigger exceedance, a source identification investigation will be initiated.

Findings

During the 2012-2013 reporting year, Tempe Environmental Compliance Inspectors conducted 66 outfall inspections. Of these, 41 inspections were completed at priority outfalls, and 12 these inspections identified flow from five outfalls. All 12 events were screened in the field, five laboratory samples were taken, and three inspections were conducted.

Laboratory analysis results in each case confirmed that no parameters were above the applicable Surface Water Quality Standards. Flow from all five outfalls were determined to not be significant sources of pollutants and were identified as either irrigation tail water, irrigation flow, already permitted AZPDES discharges, or runoff coming from the Papago Park Ponds outside of Tempe's jurisdiction.

Completed outfall inspection forms are included as **Attachment U**.

I. New or Revised Ordinances, Rules, or Policies

Revised Ordinances

Tempe revised portions of Chapter 12, Article IV and Article VI of the City Code during the 2012-2013 reporting year. Changes became effective in September 2012. A summary of revisions follows:

- Sustainable development and redevelopment terminology added (Sec. 12-56)
- ARCA definition clarified (Sec. 12-57)
- BMP definition added (Sec. 12-57)
- First flush definition added (Sec. 12-57)
- Exception section repealed and clarified in Sec. 12-73 (Sec. 12-60)
- Public Works Director responsibilities clarified (Sec. 12-71 and Sec. 12-72)
- Clarifying and new language added (Sec. 12-73)
    - adverse impact on other property or city infrastructure
    - ARCA and Clean Water Act exceptions clarified
    - BMPs for Tempe Town Lake
- ARCA definition removed (Sec. 12-118)
- BMP definition added (Sec. 12-118)
- Clarifying language added (Sec. 12-127)
- Civil penalty amount increased (Sec. 12-149)
- ERP language added (Sec. 12-153)

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

Policies and SWMP

On March 7-8, 2012, the Arizona Department of Environmental Quality (ADEQ) contractor, PG Environmental, LLC, conducted an audit of the City of Tempe Municipal Separate Storm Sewer System (MS4) Program. As a result of audit findings and recommendations, Tempe made modifications to three program components: IDDE Program, Municipal Facility Stormwater Inspection Program, and the Private Construction Inspection Program. Program enhancements resulted in changes to internal procedural/guidance documents and the SWMP. ADEQ approved all program modification in January 2013.

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 is a reflection of how the community wants to grow and change over the next 30 years. During the 2012-2013 fiscal year, Tempe worked to build upon the existing plan and develop a draft General Plan 2040. The concept of Low Impact Development has been added to the draft plan in the form of General Plan strategies and goals. Tempe anticipates completion of the plan in the 2013-2014 fiscal year, with voter approval in May 2014. Plan development 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. **Attachment V** provides a summary of findings. Improvements to the plan consist of four actions:

- Administrative changes that will be addressed by City of Tempe staff;
- Development of a Plan "forward" that will be addressed by City of Tempe staff;
- Deletion of non-relevant sections; and
- Use of information that will result from the Tempe Area Drainage Master Study/Plan (ADMS) project being conducted by the Flood Control District of Maricopa County (FCDMC).

The Tempe ADMS project will utilize FLO2D and SWMM modeling that will meet most of Tempe's Master Plan update needs. Completion of Phase I of the project is expected in mid-2014, and completion of Phase II of the project (if approved) is expected in mid-2015. Once the project is completed, Tempe will utilize the product to update the city's 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 W** for a copy of the plan.

J. Fiscal Expenditures

Tempe's estimated 2012-2013 reporting year expenditures related to implementation of the stormwater program are $1,379,455. A more detailed analysis of fiscal expenditures can be found in Section 12 of this report.

K. Training Summary[1]

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

Tempe coordinated 21 employee training events covering Permit-required training topics over the course of the 2012-2013 reporting period. A total of 245[1] employees attended these events. Note that Municipal Facility training includes the identification and reporting of illicit and non-stormwater discharges but is not specifically categorized as IDDE training because the training event primarily focuses on pollution prevention and good housekeeping. See training summary in Table 11 for specific training details.

Table 11: Summary of Training Activities

Date(s)	Target Groups	Topic(s)	Permit Training Type	Attendees	Trainer
09-Aug-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	What is Illicit Discharge; Allowable Non-Stormwater; MS requirements; Mapping; Develop & Implement Plan; Documentation; Source Location & Removal; Responsibility, Authority & Tracking & Measure Success.	Illicit Discharge Detection & Elimination Training	9	National Stormwater Center
10-Aug-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	Inspector Training; Regulated Industrial Sectors, Prioritization; Scope of Inspections; No Exposure Exemption; Common Requirements; SWPPP Content; National Standards; Minimization of Exposure; Exposure Solutions; Routine Inspections; Visual Examination; Allowable Non-Stormwater; Documentation & Annual Compliance Evaluation.	Land Transportation Facility Inspections (Sector P)	9	National Stormwater Center
07-Sep-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	The Law-CWA, NPDES, Permit & Ordinance; Sector Specific Control Measures, BMPs & P2; Inspections, Visual Exams, Sampling, Annual Evaluation, Reports & Forms	Steam Electric Generating Facilities (Sector O)	9	National Stormwater Center
07-Sep-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	The Law-CWA, NPDES, Permit & Ordinance; Sector Specific Control Measures, BMPs & P2; Inspections, Visual Exams, Sampling, Annual Evaluation, Reports & Forms	Food and Kindred Produce Facility Inspections (Sector U)	9	National Stormwater Center
20-Sep-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	Inspector Training: Minimum Control Measures	Good Housekeeping Pollution Prevention	9	National Stormwater Center
24-Oct-12	*Tempe Management, Supervisors*	Stormwater Program Update	Municipal Facilities	10	Tempe Environmental Services

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

25-Oct-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	The Law-CWA, NPDES, Permit & Ordinance; Sector Specific Control Measures, BMPs & P2; Inspections, Visual Exams, Sampling, Annual Evaluation, Reports & Forms	Construction Inspections & Sector X - Printing, Publishing, and Allied Industries	9	National Stormwater Center
26-Oct-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	The Law-CWA, NPDES, Permit & Ordinance; Sector Specific Control Measures, BMPs & P2; Inspections, Visual Exams, Sampling, Annual Evaluation, Reports & Forms	Fabricated Metal Product Facility Inspections (Sector AA)	9	National Stormwater Center
26-Oct-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	The Law-CWA, NPDES, Permit & Ordinance; Sector Specific Control Measures, BMPs & P2; Inspections, Visual Exams, Sampling, Annual Evaluation, Reports & Forms	Transportation Equipment (Sector AB)	9	National Stormwater Center
26-Oct-12	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	The Law-CWA, NPDES, Permit & Ordinance; Sector Specific Control Measures, BMPs & P2; Inspections, Visual Exams, Sampling, Annual Evaluation, Reports & Forms	Electronic, Electrical, Photographic and Optical Goods Facility Inspections (Sector AC)	9	National Stormwater Center
27-Dec-12	*Engineering - Private Development*	Private 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	7	Tempe Public Works Engineering
10-Jan-13	*Environmental Compliance Inspectors, Environmental Quality Specialists, Environmental Compliance Supervisor*	Inspector Training IDDE Program Updates	Illicit Discharge Detection & Elimination Training	9	Tempe Environmental Services
21-Mar-13	*Parks*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; & Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices..	Municipal Facilities	14	Tempe Environmental Services

26-Mar-13	*Parks*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; & Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices..	Municipal Facilities	9	Tempe Environmental Services
27-Mar-13	*Parks*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; & Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices..	Municipal Facilities	6	Tempe Environmental Services
04-Apr-13	*Water Quality Specialists & Environmental Compliance Supervisor*	Training IDDE Program	Illicit Discharge Detection & Elimination Training	5	Tempe Environmental Services
10-Apr-13	*Engineering - CIP*	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	9	Tempe Environmental Services
18-Apr-13	*Solid Waste*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	46	Tempe Environmental Services
25-Apr-13	*Utilities Services*	Pollution Prevention; Tempe Code; Spill Management; Field Guidance Manual; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices.	Municipal Facilities	24	Tempe Environmental Services
15-May-13	*Transportation*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	24	Tempe Environmental Services

24-June-13 – 25-June-13	*Environmental Compliance Supervisor*	Industrial, Construction, Municipal Permit Compliance; Municipal, Commercial, Industrial, Construction Inspections; Pollution Prevention; Illicit Discharge.	Certified Stormwater Inspector Training	1	National Stormwater Center
Total Number of Training Events:					**21**
Total Number of Attendees:					**245**

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:	**2010 - 2011**	**2011 - 2012**	**2012 - 2013**	**2013 - 2014**	**2014 - 2015**
Illicit Discharge Detection & Elimination Program					
1. Municipal Employee Training					
Number of training sessions (on non-stormwater discharges and the IDDE program)	**1**	**0**	**4**		
Number of employees attending training	**7**	**0**	**14**		
2. Spill Prevention					
Number of municipal facilities identified with hazardous materials	**10**	**53**	**53**		
Number of spills at municipal facilities with hazardous materials that occurred in outside areas	**0**	**1**	**1**		
Number of facility assessments completed *(identify any issues found requiring follow-up in narrative and summarize new practices to minimize exposure*)	**29**	**114**	**59**		
Date of last review of HWMP (*identify committee participant with stormwater expertise in narrative*)	**5/11/2011**	**5/11/2011**	**12/19/12** **6/25/13**		
3. Outfall Inspections					

Total number inspected *(attach or forward electronic copy of inventory or map of major outfalls and priority outfalls)*[1]	**77**	**57**	**66**		
Number of 'priority outfalls' identified to date *(summarize findings and follow-up actions in narrative)*	**15**	**19**	**19**		
Number of 'priority outfalls' inspected[2] *(summarize findings and follow-up actions in narrative)*	**27**	**30**	**41**		
Number of dry weather flows detected	**4**	**11**	**12**		
Number of dry weather flows investigated	**0**	**10**	**3**		
Number of major outfalls sampled[3]	**3**	**11**	**17**		
Number of illicit discharges identified	**0**	**0**	**0**		
Number of illicit discharges eliminated	**0**	**0**	**0**		
Amount (percentage, linear miles, etc.) of storm drain inspected[4]	**2349.5 feet**	**9057.5 feet**	**9330.9 feet**		
Number of storm drain cross connection investigations	**0**	**0**	**0**		
Number of illicit connections detected	**0**	**0**	**0**		
Number of illicit connections eliminated	**0**	**0**	**0**		
Number of corrective or enforcement actions initiated within 60 days of identification[5]	**8**	**10**	**36**		

[1] All maps and inventories are maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request.
[2] Number reflects the number of priority outfall inspections.
[3] Includes field screening and analysis.
[4] CCTV inspections only.
[5] Total number of corrective and enforcement action for the FY excluding minor construction and post-construction.

Percent of cases resolved within one calendar year of original enforcement action	**8**	**10**	**36**		
Number of illicit discharge reports received from public	**36**	**60**	**37**		
Percent of illicit discharge reports responded to	**100**	**100**	**100**		
Percent of responses initiated within three business days	**100**	**100**	**100**		
Municipal Facilities					
1. Employee Training					
Number of training events *(dates and topics to be included in narrative)*	**6**	**4**	**6**		
Number of staff trained	**180**	**136**	**123**		
2. Inventory, Map, or Database of MS4 Owned & Operated Facilities					
Total number of facilities on inventory	**140**	**143**	**143**		
Date identification of "higher risk' facilities completed	**In process**	**6/20/2012**	**12/26/2012**		
Date prioritization of municipal facilities completed	**In process**	**6/20/2012**	**12/26/2012**		
3. Inspections					
Miles of MS4 drainage system prioritized for inspection	**In process**	**101.5**	**101.5**		
Miles visually inspected[1]	**6.44**	**247.72**	**127**		
Number of municipal facilities inspected[2]	**29**	**114**	**48**		
Number of 'higher risk' municipal facilities inspected	**0**	**12**	**8**		

[1] Includes CCTV and above-ground linear inspections of the drainage system. Does not include cursory street inspections.
[2] This numeric parameter was added by Tempe to provide a more detailed explanation of the municipal inspection program.

Number of 'higher risk' municipal facilities found needing improved stormwater controls	**0**	**5**	**2**		
4. Infrastructure Maintenance					
Linear miles of drainage system cleaned each year (*City to maintain records documenting specific street cleaning events*)	**13,440**	**21,890**	**21,890**		
Record amount of waste collected from street and lot sweeping (reported in pounds, gallons, etc.)	**714.70 Tons**	**828.81 Tons**	**937.4 Tons**		
Total number of catch basins[1]	**367**	**645**	**1047**		
Number of catch basins cleaned	**90**	**172**	**197**		
Amount of waste collected from catch basin cleaning (tons)	**67**	**50.41**	**27.8**		
Industrial and Commercial Sites Not Owned by the MS4					
Number of training events for MS4 staff	**1**	**3**	**11**		
Number of municipal staff trained	**7**	**9**	**9**		
Number of industrial facilities inspected[2] (see Appendix A, Part V.B)	**76**	**122**	**122**		
Number of corrective or enforcement actions initiated on industrial facilities[2]	**0**	**7**	**22**		
Percentage of cases resolved under the ERP within one (1) calendar year of original enforcement action	**N/A**	**N/A**	**100**		
Construction Program Activities[3]					
Number of training events for MS4 staff	**3**	**3**	**2**		

[1] Inspected, includes other stormwater infrastructure such as drywells, bubbler boxes, inlets, etc.
[2] Number excludes restaurant inspections.
[3] Includes private and CIP activities.

(include topics in narrative summary)					
Number of municipal staff trained	**13**[1]	**14**	**16**		
Number of construction/grading plans submitted for review	**9**	**15**	**13**		
Number of construction/grading plans reviewed	**9**	**15**	**13**		
Number of construction sites inspected[2]	**9**	**14**	**24**		
Number of corrective or enforcement actions initiated on construction facilities (*identify the type of actions in narrative summary*)	**0**	**3**	**9**		
Post Construction Program Activities					
Number of post-construction inspections completed	**0**	**4**	**3**		
Number of corrective or enforcement actions initiated for post-construction activities (*identify the type of actions in narrative summary*)	**0**	**0**	**0**		

[1] Number updated from the 2011-2012 Annual Report. Redundant counting of staff was removed.
[2] Number may not match review and prioritization number based upon date of grading and drainage permit issuance.

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 2012-2013 reporting period consisted of enhancements resulting from the 2012 audit and completion of permit required activities. Quantifiable program successes include the following:

- Successful completion of audit corrective actions and program enhancements
  - IDDE Guidance Manual
  - Municipal Facility Program Enhancements
  - Private Construction Stormwater Program Enhancements
- Review and update of Tempe Stormwater Code
- Completed Stormwater Master Plan review
- Completed development and implementation of the new Enforcement Response Plan
- Significant municipal facility BMP development and implementation (ongoing)
- Successful completion of make-up sampling events
- Analysis and trending of stormwater sampling results
- Catch basin labeling public participation
- All SWMP numeric goals were met

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

As a result of the 2012 stormwater audit findings and recommendations, Tempe made modifications to three programs: IDDE, Municipal Facility Stormwater Inspections, and Private Construction. Program enhancements resulted in the following changes:

- Development of an IDDE Guidance Manual
- Municipal facility ranking criterion modifications, including items such as sediment discharge, storage practices, site activities, and general housekeeping
- Municipal facility inspection criterion modifications, including items such as sediment discharge, storage practices, site activities, and general housekeeping
- Municipal facility pollution prevention upgrades (See Section 3.D of this report)
- Private construction program enhancements related to in-plan review, inspections, and BMP design criteria
- Minor SWMP modifications clarifying IDDE and municipal facility updates

ADEQ reviewed and approved all program modifications in January 2013.

B. Addition of Temporary Control Measures

Tempe continues temporary control measures related to discharge concentrations of E. coli and copper that were higher than applicable SWQSs. The temporary measures relate to outreach/education message topic and frequency and industrial/commercial inspection focus. See Section 10.C of this report for details.

C. Increase of Existing Control Measures

As described in Section 3.D of this report Tempe has temporarily increased municipal facility inspection at six facilities as a result of BMP needs. Inspection frequency is anticipated to decrease as temporary BMPs are replaced with permanent infrastructure and/or practices.

As a result of Tempe's storm drain labeling program, Tempe significantly increased the number of catch basin inspections during the 2012-2013 reporting year. The increase is a direct result of this public involvement activity and is subject to variation in the future.

D. Replacement of Existing Control Measures

If replacement of existing control measures occurs as a result of program changes, Tempe will provide a summary in the 2013-2014 Annual Report. No such replacements occurred during the 2012-2013 reporting year.

7. Monitoring Locations

This section requires a brief description of each stormwater monitoring location, including the following information, which was provided to ADEQ in the 2010-2011 Annual Report:

- Name and description of receiving water
- Outfall identification number
- Address or physical location of the site
- Latitude and longitude
- Size (acres) of the drainage area
- Land uses within the drainage area with an estimated percentage of each use
- Type of monitoring equipment

There has been no change in the information previously submitted to ADEQ. This 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

This section requires the following information:

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 requested information which is included as **Attachment X.**

Tempe tracks all sampling events required by the Permit. **Attachment Y** summarizes sampling status throughout the 2012-2013 reporting year. Note that Tempe has successfully caught up on all previously missed events.

9. Summary of Monitoring Data (By Location)

Attachment Z provides a summary of all monitoring data for each site. All Laboratory Reports are included as **Attachment AA**.

10. Assessment of Monitoring Data

A. Stormwater Quality

Tempe has reviewed all sampling event results collected from November 2011 through March 2013. A full trending of data is included as **Attachment BB**. Below is a summary of findings:

- Average duration of composite sampling events is 77 minutes. A short sampling timeframe allows for capture of the "first flush," but results lack accurate representation of the entire discharge event. As a result, loadings and event concentrations are representative of only early event flows and not entire events, resulting in an unrepresentatively high bias for event loadings and concentrations.

- Flow rate and volume during each sampling event vary significantly between sampling locations. This is to be expected due to significantly different stormwater basins.

- Temperature averages 21 C° including winter and summer events, which are distinctly separated by an average of approximately 10 C°.

- pH ranged from a low of 6.5 S.U. to a high of 8.0 S.U.

- Overall, the majority of data collected indicates a trend toward higher levels of contaminants observed during the initial precipitation event(s) at the start of a "wet season" – either July (summer wet season) or November/December (winter wet season). As a result of Tempe's need to make-up several sampling events, Tempe was able to compare results from several events within the same wet season, which allowed for this comparison. Note that collection events at the start of seasons will further increase potential for bias to higher concentration and loading results.

- In all, 28 sampling events were conducted during the winter wet season (November through May during 2011-2013), while 21 sampling events were conducted during the summer wet season (June through October 2012-13).

- Conventional laboratory parameters (i.e. Hardness, TSS, TDS, BOD, COD), metals, and nutrients were observed to be detected throughout the year, with highest levels for most parameters observed typically during the first events toward the beginning of each

season (July and December). These higher levels are also observed during events occurring after prolonged dry periods, regardless of their position in a given season.

- Averaged conventional laboratory parameters (i.e. Hardness, TSS, TDS, BOD, COD) vary from site to site, with TD-01 and SR-08 maintaining the highest concentrations. TD-01 land use is predominantly industrial, while SR-08 land use is predominantly residential.

- Metals and nutrients comprised the largest groups of components detected, with results observed for nearly all components, nearly all sites, and almost every event.

- Average nutrients observed at each site are relatively consistent despite differing land uses.

- Zinc, barium, and copper averages are the highest metal constituent concentrations (> 10 µ/L). Remaining metal constituent averages are < 5 µ/L or non-detect.

- Averaged zinc conducted at each site identifies higher concentrations at SR-08, TD-01, and TD-03. TD-01 and TD-03 land use is predominantly industrial. SR-08 land use is predominantly residential.

- Averaged barium is slightly higher at TD-01 and SR-08 sites than at the remaining sites. TD-01 land use is predominantly industrial, while SR-08 land use is predominantly residential.

- Average copper concentrations range from 27.63 µ/L at TD-03 to 13.70 µ/L at SR-08. TD-03 land use is predominantly industrial, while SR-08 land use is predominantly residential.

- Of all Organics analyzed (i.e., Organic Toxic Pollutants – 2 components, Volatile Organic Components (VOCs) – 33 components, Semi-Volatile Organic Components (SVOCs) – 45 components, and Pesticides – 25 components), solely five detects were observed throughout the entire dataset– and each consisted of detection near the Practical Quantitation Level (PQL). The detected Organics were comprised of: two Total Oil and Grease detects, which were observed during the winter wet season (from individual sites, although both in December); two Phenol (SVOC) detects, which occurred in summer wet season (both from the same site and in July and September); and a Diethyl phthalate (SVOC) detect, which occurred in the winter wet season. Due to the lack of additional data points, trending of Organics is not possible.

- E. coli was frequently observed during both wet seasons. However, a trend toward higher levels of E. coli was observed during the summer wet season – specifically during July through August.

Tempe suspects that TD-01 sampling is 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. Tempe will continue to evaluate this potential and report finding in the 4th year annual report.

B. Water Quality Standards (WQS)

Stormwater monitoring sampling results conducted consistent with Permit sampling conditions have been compared to Surface Water Quality Standards (SWQS) for the applicable receiving water. Summary of Monitoring Data sheets **in Attachment Z** 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; however, guidance on how the collection of hardness samples is conducted is not provided. Beginning with the 2012-2013 reporting year, Tempe's approach to collecting ambient hardness data for a perennial water body, for the purposes of SWQS comparison, changed. During the 2011-2012 reporting year, Tempe collected this information by sampling the applicable water body (Kiwanis Park Lake) at the time of the stormwater event. After evaluation of the hardness data, Tempe concluded that the water body was under the direct influence of the stormwater discharge and not representative of ambient conditions. In an effort to compare hardness dependent parameters to ambient conditions, Tempe samples this water body during times that stormwater discharges are not occurring. The same practice has been implemented for the effluent dependent water body in the Salt River, above Tempe Town Lake.

C. Exceeding a WQS

During the 2011-2012 reporting period, Tempe identified two constituents with concentrations greater than the applicable SWQSs. E-coli was found to be higher than the SWQS at four sites and dissolved copper was found to be higher than the applicable hardness dependent standard at two sites. During the 2012-2013 reporting period, Tempe identified the same two constituents with concentrations greater than the applicable SWQSs at all sampling locations. With exception of copper at SR-08, all sites have experienced recurring events. Please see **Attachment CC** for details pertaining to sampling date, location, impacted receiving water, SWQSs, and results.

During the 2011-2012 reporting period, Tempe began the implementation of provisions outlined in Permit Section 4.0, related to the recurrence of discharges higher than SWQSs. As a result of sampling during the 2012-2013 reporting period, Tempe continues this effort. Potential pollutant sources and applicable control measures are summarized in Tables 12 and 13.

After a full review of all sampling results, there does not appear to be an immediate correlation between implemented control measures and E. coli and copper concentrations. As discussed in Section 10.A above, the concentrations of these pollutants correspond more directly to when the sample was taken (time of year and season) and likely a result of capturing the first flush as opposed the entire event. Tempe will continue to evaluate existing and future analytical data in an effort to better understand impacts on pollutant concentrations.

Table 12: 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 13: 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

This section requires the following information:

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.

Table 14 provides a summary of 2012-2013 pollutant loading estimates and **Attachment DD** contains detailed analysis information.

Table 14: 2012-2013 Annual Pollutant Loading Estimate (tons)

	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	21	1.7	13	3.9	9.7	127	0.085
COD	89	7.3	54	16	41	536	0.36
TSS	90	7.3	54	17	41	541	0.36
TDS	116	9.4	70	21	53	698	0.47
Total Nitrogen	2.3	0.18	1.4	0.42	1.0	14	0.0091
TKN	1.6	0.13	0.99	0.30	0.75	9.8	0.0066
TP	0.30	0.024	0.18	0.055	0.14	1.8	0.0012
Antimony	0.0005	0.0000	0.0003	0.0001	0.0002	0.0029	0.0000
Arsenic	0.0005	0.0000	0.0003	0.0001	0.0002	0.0032	0.0000
Barium	0.013	0.0011	0.0078	0.0024	0.0060	0.078	0.0001
Beryllium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Cadmium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Chromium	0.0002	0.0000	0.0001	0.0000	0.0001	0.0014	0.0000
Copper	0.0091	0.0007	0.0055	0.0017	0.0042	0.055	0.0000
Lead	0.0005	0.0000	0.0003	0.0001	0.0002	0.0032	0.0000

Mercury	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Nickel	0.0004	0.0000	0.0002	0.0001	0.0002	0.0023	0.0000
Selenium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000
Silver	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Thallium	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Zinc	0.035	0.0029	0.021	0.0066	0.016	0.21	0.0001

12. Annual Expenditures

Tempe's stormwater program expenditures for the July 1, 2012 – June 30, 2013 reporting period is conservatively estimated to be $1,379,455. Funding for the program comes from Tempe's CIP fund and 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 time and material 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.

Tempe's stormwater expenditures reflect a slight decrease over the 2012-2013 reporting year. The following considerations help to explain this decrease:

- Most new programs are no longer in the development and implementation phase, which required more time, equipment, and resources. The more established programs have also found and implemented efficiencies, therefore reducing overall costs.
- Parks "Adopt-A" and volunteer programs were represented as estimated financial benefit in the last two annual reports. This year, the actual cost of managing the program is represented.
- Most mapping requirements were addressed during the first two annual reports. No new maps were created during the last reporting period.
- While some activity costs increased (e.g. sampling, inspections, administration, outreach, etc.), collective expenditure fluctuations resulted in a slightly lower overall cost of implementation.

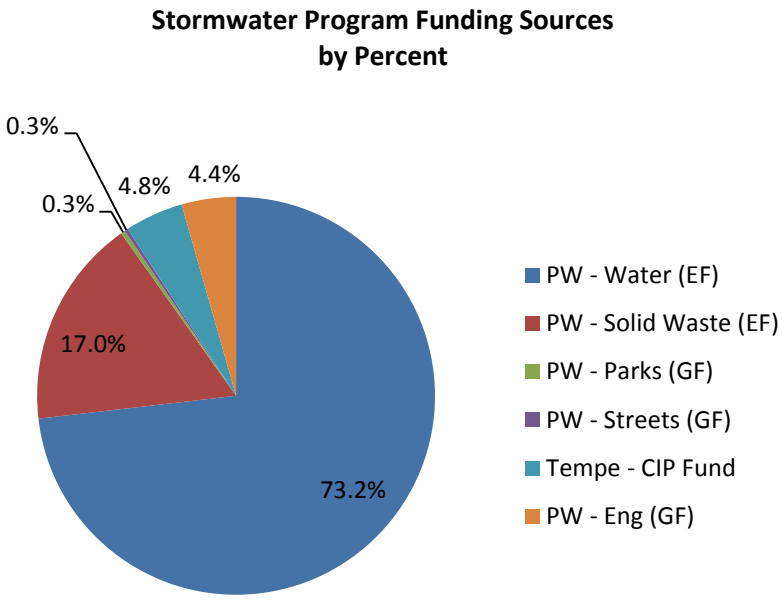
Tempe cannot accurately estimate the scope of budget changes and cost allocations for the 2013-2014 reporting year; however, the City does anticipate expenditures similar to this year. Tempe will continue to streamline various City processes and increase operational efficiencies to ensure that all stormwater regulatory mandates are met in an economically and environmentally responsible manner. A full summary of this Fiscal Analysis can be found in Table 15.

Table 15: Tempe MS4 Annual Expenditures and Fiscal Analysis Fiscal Year 2012-2013

Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Program administration (annual reporting, SWMP development, implementation, training, etc.)	$298,406	PW - Water (EF)	Cost allocation charge for 2 EQS/EPS
Legal Counsel	$2,000	PW - Water (EF)	Legal counsel - time
Municipal Facility Stormwater Upgrades and Infrastructure Repair	$47,485	PW - Water (EF)	Cost for facility BMPs and minor infrastructure repair
Public Education and Outreach		PW - Water (EF)	
Materials	$10,674		Handouts and BMP brochure printing
Memberships (i.e. STORM)	$2,500		STORM Membership
Other	$444		Event Fee
Public Involvement and Participation			
Hazardous Mat Safety/HPCC	$235,049	PW - Solid Waste (EF)	1/2 Full Operational Expenditures
"Adopt-A-" and Volunteer Prgms	$2,376	PW - Parks (GF)	Supplies-Equipment-Time
Adopt-A-Street	$1,400	PW - Streets (GF)	Time
Training (external)	$3,173	PW - Water (EF)	External Stormwater Training
Capital expenses for new, replaced, or repaired stormwater sewers, capital for facility replacement.	$65,543	Tempe - CIP Fund	Repair/Replace storm sewer
Operational expenses for cleaning and/or repairing stormwater sewers.		PW - Water (EF)	
Cleaning (internal)	$0		Internal cleaning labor
Cleaning (contract)	$53,071		Contract cleaning
Engineering Capital Construction Stormwater Programs	$41,375	PW - Eng (GF)	Staff Time
Engineering Private Construction Stormwater Programs	$19,501	PW - Eng (GF)	Staff Time
Stormwater GIS development, maintenance, and operations, staff time, etc.	$2,880	PW - Water (EF)	Stormwater GIS development, maintenance, operations, and staff time

Inspections/enforcement (outfalls, IDDE, industrial/commercial, etc.) and sampling assistance.	$125,985	PW - Water (EF)	Inspections - time and equipment
Monitoring/Analytical		PW - Water (EF)	
Analytical	$60,500		External Lab Fees Only
Staff Time - Chemists	$50,000		Staff analytical
Staff Time - Sampling	$64,990		Staff sampling
Equipment	$14,568		Sampling Equipment
CCTV	$12,200	PW - Water (EF)	Inspection - time and equipment
Parks	$2,376	PW - Parks (GF)	Inspection - time and equipment
Streets			
Inspections	$2,600	PW - Streets (GF)	Time
Street sweeping	$250,359	PW - Water (EF)	4 FTEs - Stormwater Expenditures
Permit Fee	$10,000	PW - Water (EF)	Permit Fee
Total	**$1,379,455**		

A summary of funding sources can be found below.



13. Attachments

In an effort 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 16 summarizes the attachments.

Table 16: Summary of Report Attachments

Attachment Letter Designation	Attachment Name	Attachment Letter Designation	Attachment Name
A	OUTREACH, EDUCATION, AWARENESS	P	INDUSTRIAL COMMERCIAL INSPECTIONS
B	STORM ANNUAL REPORT	Q	RESTAURANT INSPECTIONS
C	TRAINING SIGN IN SHEETS	R	NON-FILER NOTIFICATIONS
D	ESS ARCA AND OTHER INFRASTRUCTURE INSPECTIONS	S	CONSTRUCTION INSPECTIONS
E	MS4 CLEANING SUMMARY AND REPORTS	T	TEMPE CITY CODE
F	PARKS AND OPEN SPACE INFRASTRUCTURE INSPECTIONS	U	OUTFALL INSPECTIONS
G	STREETS INFRASTRUCTURE INSPECTIONS	V	STORMWATER MASTER PLAN REVIEW SUMMARY
H	WUD ENG CCTV REPORTS	W	CITY OF TEMPE ERP
I	CALL-OUT SUMMARY	X	SAMPLING EVENT PARAMATERS
J	ENFORCEMENT DOCUMENTS	Y	MS4 SAMPLE EVENT TRACKING
K	MUNICIPAL FACILITY INSPECTIONS	Z	SUMMARY OF MONITORING DATA SHEETS
L	MUNICIPAL FACILITY CHEMICAL HANDLING AND SPILL PROCEDURES	AA	LABORATORY REPORTS
M	HWMP	BB	DATA TRENDING 2011 - 2013
N	COT MS4 PESTICIDE HERBICIDE PLAN	CC	SWQS COMPARISON
O	MSGP-SARA INVENTORY	DD	POLLUNTANT LOADING REPORT