



CITY OF TEMPE

2010-2011

ANNUAL PHASE I MS4 REPORT

As Prescribed by AZPDES Permit No. AZ000005-2010 Appendix B

September 2011

*Prepared by the City of Tempe
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, 2010 – June 30, 2011

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

9/20/11
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. Over the 2010-2011 reporting year, Tempe has conservatively reached eight (8) target groups totalling approximately 46,473 people and/or businesses while covering a wide array of stormwater topics. Table 1 summarizes events, topics, number of people reached, number and type of materials distributed, and target groups. Examples of outreach materials can be found in **Attachment A**.

Regional Activities

The City of Tempe is an active member of Stormwater Outreach for Regional Municipalities, known as STORM. STORM is a regional organization promoting stormwater quality education within the greater Phoenix metropolitan area 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 storm water 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 comprised of 22 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 the Phase II MS4s of Apache Junction, Avondale, Chandler, El Mirage, Fountain Hills, Gilbert, Guadalupe, Goodyear, Luke Air Force Base, Maricopa County, Paradise Valley, Peoria, Surprise, Tolleson, Youngtown, and Flood Control District of Maricopa County (FCDMC). All members are encouraged to participate at meetings that are held on the third Tuesday of each month.



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
<i>Municipal Facilities</i>	Jul-10 through Jun-11	Stormwater info for residents	500	500 bookmarks and NPS puzzles; 50 each Home Repair, Yard & Garden, Pool, Pet, and Auto BMPs	General Public
<i>E-Bulletin (3Q2010E-bulletin)</i>	Aug-10	MSGP permit & Tempe stormwater program info	115	115 Environmental Bulletins via e-mail.	Commercial, Industrial Businesses
<i>E-Bulletin (4Q2010E-bulletin)</i>	Oct-10	NEC & Tempe stormwater program info	115	115 Environmental Bulletins via e-mail.	Commercial, Industrial Businesses
<i>Tempe Tardeada</i>	10/10/2010	Stormwater information for home owners	200	200 (total) Home repair, Yard & Garden, Pet waste, FOG, Auto, and Pool BMPs distributed	General Public
<i>Gain Night</i>	10/23/2010	Stormwater information for home owners	1000	1000 (total) Home repair, Yard& Garden, Pet waste, FOG, Auto, and Pool BMPs distributed	Home Owner Associations, Residential Community
<i>Tempe Town Lake Pet Walk</i>	2/20/2011	Pet Waste and Stormwater Pollution	100	100 Pet Waste Brochures	Tempe Town Lake Visitors, General Public
<i>Tempe Chamber of Commerce</i>	2/25/2011	Fats, Oils, and Grease Disposal	10	FOG presentation including MS4 impacts	Restaurants
<i>E-Bulletin (1Q2011E-bulletin)</i>	3/1/2011	Tempe stormwater program info	115	115 Environmental Bulletins via e-mail.	Commercial, Industrial Businesses
<i>ASU Student Housing Fair</i>	3/23/2011	Stormwater information for residential use	200	200 (total) Home repair, Yard& Garden, Pet waste, FOG, Auto, and Pool BMPs distributed	Schools
<i>Annual Tempe Today Article</i>	Mar-11	Overview of stormwater program	44,000	Annual article in Tempe Today newsletter inserted into water bills	General Public, Residential Community, Industrial, Commercial Businesses
<i>Downtown Tempe Community</i>	6/6/2011	Fats, Oils, and Grease Disposal	3	FOG presentation including MS4 impacts	Downtown Tempe Businesses
<i>E-Bulletin (2Q2011E-bulletin)</i>	Jun-11	MSGP permit & Tempe stormwater program info	115	115 Environmental Bulletins via e-mail.	Commercial, Industrial Businesses
			46,473	Estimated annual total of people or businesses reached through 12 awareness and outreach activities.	

STORM key accomplishments for fiscal year 2010-2011 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.



- Updated the web site located at www.azstorm.org , which relays our message in both English and Spanish. Details of web site activity are included in the FY 2011 STORM annual report on pages five and six, which shows a total number of 5729 hits on the site during the period from July 2010 through June 2011. The website was redesigned to update information and the look of the website.
- Movie Theater Campaign - STORM's FY 2011 movie theater campaign began November 26, 2010, and ran for six (6) weeks to correspond to the winter rain season. The movie theater campaign was shown at seven (7) theaters throughout the Phoenix metropolitan area, showing on 154 movie screens. Based upon historical movie admission rates, it is estimated that the campaign was shown to approximately 1,100,000 people. STORM expended \$10,000 for the movie theater campaign in FY 2011.
- Radio Campaigns - STORM conducted one radio ad campaign during FY 2011. The campaign aired a PSA regarding the importance of used oil recycling to prevent pollution from improper disposal of used oil. The PSA was aired in both English and Spanish on nine (9) radio stations during the time period of November 29, 2010 – January 15, 2011. The PSA audience, age 12 and above, was estimated at 3,168,300. The cost of the campaign was \$9,978.26. The PSAs are posted on the website at <http://www.azstorm.org/radio-psa/>.
- Maricopa County Stormwater Construction Seminar - On June 1, 2011, STORM and the Arizona Chapter of the Associated General Contractors of America held the 1st Annual Maricopa County Stormwater Construction Seminar. The Arizona Department of Transportation provided the seminar room at no charge and STORM provided refreshments. This free seminar featured presentations by member municipalities, as well as county and state agency representatives, regarding the AZPDES regulatory requirements unique to construction sites within Maricopa County. The seminar had approximately 80 attendees.
- Display boards continue to be used at community outreach events to convey the difference between the sanitary sewer and storm sewer systems to the public, including suggestions for avoiding adding pollutants to the stormwater system. These display boards were utilized by several STORM members at various events listed in Attachment B of the FY 2011 STORM annual report. Table banners were created during this fiscal year to depict the STORM name, logo, and website.
- Promotional Items - Various promotional items have been previously developed with STORM's logo, website address, and/or mission statement. These are made available to members to distribute at local events. STORM expended \$19,299.39 on promotional items for FY 2011. Additionally, STORM had some promotional



items left over from FY 2010 that were used during this fiscal year. STORM distributed magnetic clips, bags-on-board for pet waste, silicone bracelets, and magnets which included the STORM logo, slogan, and website information for use as promotional giveaways. Two brochures were distributed to convey information for preventing stormwater pollution, "Stormwater Pollution Prevention Begins with You!" and "Stormwater Pollution Prevention for Construction Sites."

The FY 2011 STORM annual report can be found in **Attachment B**.

B. Public Involvement Activities Including Outreach

Adopt-A-Park and Adopt-A-Street

Tempe has added city Adopt-A-Park and Adopt-A-Street programs as a component of the public involvement and participation portion of the city's stormwater program. This addition has allowed for a more detailed and accurate assessment of proactive pollutant prevention and elimination activities. In addition to the aesthetic value of these programs, the public and community service workers have helped Tempe to remove an estimated 1,719 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-Park and Adopt-A-Street can be found at:

- <http://www.tempe.gov/parks/adoptapark/>
- <http://www.tempe.gov/tim/adoptastreet/>

Table 2 summarizes the number of events since January 2011, number of participants, and amount of trash removed.

Table 2: Summary of Adopt-A-Street and Adopt-A-Park Public Involvement and Participation

Events	Events	Volunteers or Community Service Workers Involved	Bags of Trash Removed
<i>Tempe Adopt-A-Street/Volunteer Program</i>	12	132	90
<i>Tempe Adopt-A-Park</i>	83	1245	1629
Totals	95	1377	1719



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 dumping within the community. Tempe continues to operate its stormwater hotline and web-reporting form for public reporting of illegal discharges to the city's storm drain system. A summary of public reporting events can be found in Section C of this report. Means of reporting are as follows:

- 480-350-2811
- <http://www.tempe.gov/stormwater/stormwatercomplaintform.htm>

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 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 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:

- www.tempe.gov/HHW

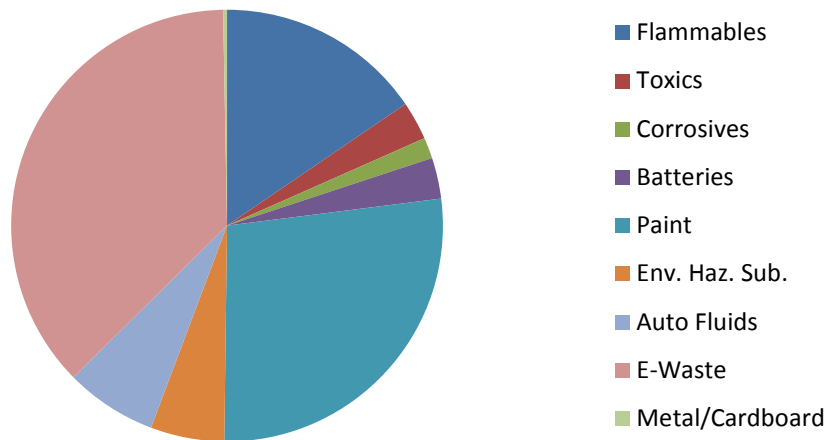
Table 3 summarizes HPCC events.

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
100	5902	247,394 pounds

Below is a breakdown of waste collected, of which there was a 90% recycle rate.

Waste Collected by Category



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

Tempe’s IDDE program consists of several components designed to educate, involve and solicit further participation from city employees and the public, proactively prevent illicit discharges, and detect and eliminate illicit discharges. Below is a summary of these IDDE related components.

Training

During the 2010-2011 reporting year, Tempe’s Environmental Services Section successfully cross trained all Environmental Compliance Inspectors in MS4 stormwater competency. This training resulted in an increase of trained stormwater inspectors from two (2) to six (6) and a more efficient and robust stormwater inspection program. Tempe anticipates filling a current Inspector vacancy during the 2011-2012 reporting year, resulting in a total of seven (7) Inspectors trained in stormwater competency.

Stormwater IDDE training for seven (7) employees (six inspectors and one Environmental Quality Specialist) occurred on September 14-16, 2010. This training encompassed detailed IDDE-related topics and was attended by all Tempe inspectors that currently conduct IDDE inspections and enforcement.



Municipal Facility training provided to 180 Tempe employees 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 all training sign-in sheets.

These Tempe employees, many of whom work in the field, have been trained to contact Tempe's Environmental Services Section in the event that a potentially illicit discharge is identified. As a result of this training, alley maintenance crews now carry and hand out pool discharge door hangers when potentially illicit pool discharges are identified.

Outreach – Pollution Prevention

Tempe continues to implement a very 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 of this program, please see Sections 3.A and 3.B of this report.

Infrastructure Inspection and Maintenance

One of Tempe's most proactive IDDE activities involves municipal stormwater infrastructure inspection and cleaning activities. These activities are divided between five (5) separate 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 G of this report for ARCA description. During the 2010-2011 reporting year, three (3) ARCA area catch basin inspection events occurred. As a result, 54 catch basins were inspected, of which 15 were referred for cleaning. A numeric summary of these events can be found further in this section. Inspection forms can be found in **Attachment D**. A summary of contracted cleaning events can be found in **Attachment E**.
- Tempe's Parks Maintenance section provides routine maintenance for various parks, retention areas, common areas, 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 2010-2011 reporting year, the Tempe Parks



Maintenance section inspected 290 pieces of city stormwater infrastructure including catch basins, inlet structures, drywells, bubbler boxes, and retention basins. Of the 290 inspections, 74 components were referred for cleaning. A numeric summary of these events can be found later in this section. Inspection forms can be found in **Attachment F**. A summary of contracted cleaning events can be found in **Attachment E**.

- Tempe's Street Maintenance section is, in part, tasked with the maintenance and cleaning/sweeping of Tempe streets and various other MS4 components. In this capacity, the Streets program includes street sweeping and routine infrastructure inspections. To reduce the amount of debris entering the MS4, Tempe continues to implement an effective street sweeping program. Based upon historic sweeping activities, the following schedule provides significant debris removal at an operationally feasible frequency (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 facilities vary upon condition.
 - Upon request (e.g., water main breaks, emergency road repairs, trackout, special events, etc.)

During the 2010-2011 reporting year, Tempe cleaned approximately 13,440 linear miles of streets, effectively removing approximately 714.7 tons of debris. A numeric summary of these events can be found later in this section.

Streets Maintenance also conducts visual inspections of catch basins and other similar infrastructure. During the 2010-2011 reporting year, this section completed inspections of 23 catch basins over a six (6) mile span. A numeric summary of these events can be found later in this section. Inspection forms can be found in **Attachment G**.

In addition to the inspections and cleaning outlined above, two additional street programs are used to conduct cursory 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 component inspection or cleaning is deemed necessary.



- Tempe’s Water Utilities Division, 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 2010-2011 reporting year, Tempe has inspected 2349.5 feet of underground MS4 conveyance. Inspection records can be found in **Attachment H**. Note that Tempe previously implemented a CCTV program that was suspended since underground infrastructure was in good shape. Most recent inspections seem to indicate similar findings. These activities are summarized below.
- 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 2010-2011 reporting year, this section assisted in one cleaning event resulting in the removal of approximately one (1) ton of debris. This event is included in Table 4.

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	54	-	15	-	65.66
Parks/Common and Rec. Areas	290	-	74	-	
Streets (excluding street sweeping)	23	6	0	-	
Pipe (CCTV)	-	0.44	0	0	
Utility Services	-	-	1	-	1
Streets (including street sweeping)	-	-	-	13,440	714.70
Totals	367	6.44	90	13,440	781.36

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% of all reported illicit discharges and investigate at least 80% of potential illicit discharges reported by the public. Of the 42 call-outs that Tempe’s Environmental Services Section received, 36 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 this 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
36	36	100	36	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 D and 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 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.) Regardless of source, Tempe responds to all reported illicit discharges and initiates investigation of these discharges within three (3) business days of detection or report. If the discharge is found to be illicit, corrective action, including enforcement mechanisms, are used to eliminate 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 or that are permitted under an ADEQ AZPDES permit are not investigated each time they are identified (e.g., irrigation 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. Note that during the 2010-2011 reporting year, all discharges were identified through physical investigations and field screening. Analytical laboratory services were not warranted.

As a result of 77 outfall inspections, 76 industrial/commercial inspections, 86 restaurant inspections, and 36 call-outs, Tempe Environmental Compliance Inspectors identified the following.

- Three (3) outfall discharges were determined to not be a source of pollutants. (Further information can be found in Section H of this report)



- Seven (7) potential or actual illicit discharges to the MS4 from industrial/commercial sources resulted in the issuance of seven (7) official warning letters. See **Attachment J**.
- One (1) illicit discharge to the MS4 from a commercial source resulted in the issuance of a Notice of Violation. **See Attachment J**.

Table 6 summarizes of Environmental Compliance Inspector investigation and inspection activities.

Table 6: Environmental Compliance Inspector Inspection Summary

Inspection Type	Number of Inspections	Official Findings/Enforcement
<i>Outfalls</i>	77	<ul style="list-style-type: none"> • Three (3) dry weather flows (determined to not be a significant source of pollutants.) • Seven (7) Warning Letters • One (1) Notice of Violation • 15 Catch basin cleanings
<i>Industrial/Commercial (non-restaurant)</i>	76	
<i>Restaurant</i>	86	
<i>Call-Out</i>	36	
<i>ARCA Catch Basins</i>	54	
Total	328	

D. Municipal Facilities

Inventory

In advance of the Permit-required timeline of three years, Tempe has completed the identification and inventory of municipal facilities. During the 2010-2011 reporting year, Tempe has inventoried 140 facilities. A list of facilities can be found in **Attachment K** and a map of general facility location can be found in **Attachment L**. This inventory is subject to change upon internal annual reviews.

Inspections

Consistent with Tempe’s Municipal Facility Stormwater Inspection Program, Tempe has inspected and prioritized a total of 29 sites. One site required follow-up action and no sites resulted in significant findings. All inspection reports can be found in **Attachment M**. Table 7 summarizes of inspection progress.



Table 7: Summary of Municipal Facility Inspections

Department/Division	Number of Facilities	Number of Facilities Inspected	Number of Facilities Re-inspected	Percent Complete
<i>PW-Water</i>	30	27	1	90
<i>Fire</i>	10	0	0	0
<i>Parks</i>	65	2	0	3
<i>Comm Serv</i>	13	0	0	0
<i>Transportation</i>	4	0	0	0
<i>Police</i>	6	0	0	0
<i>PW-Other</i>	3	0	0	0
<i>Miscellaneous</i>	9	0	0	0
Totals	140	29	1	21

Results

Results and/or activities and control measures implemented as a result of these 29 inspections are as follows:

- All inspected facilities that maintain any single container exceeding five (5) gallons of a hazardous material now post or maintain documentation of practices and procedures designed to prevent and respond to spills that may come into contact with stormwater. This document can be found in **Attachment N**. 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.
- During initial facility inspections, basic stormwater awareness practices are discussed with facility representatives. This discussion is separate and in addition to formalized stormwater training.
- The one facility requiring a re-inspection implemented new secondary containment inspection practices and light machinery storage practices to reduce the potential for stormwater exposure.
- An additional facility will be re-inspected after October 2011 when site construction is complete. Stormwater BMPs have been incorporated into the design of this facility.

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 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 (5) 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 can be found in **Attachment N**.

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

- **HPCC**

The HPCC provides various levels of support for all aspects of chemical handling, storage, disposal, and spill response practices. In large part, the HPCC is a city-wide liaison for the acquisition of necessary spill prevention and response equipment and Tempe’s in-house mechanism 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 review was conducted by Tempe’s Environmental Health and Safety Supervisor and an Environmental Quality Specialist (EQS) from Environmental Services. The HWMP can be found in **Attachment O**.

- **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 ingredients.



- **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 208.01 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 use is needed, established pesticide application best management practices are implemented. These practices were developed in conjunction with Tempe certified applicators and Tempe's Environmental Services Section. A copy of this plan can be found in **Attachment P**.
- 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.

MSGP (and other AZPDES) Tracking

Two Tempe owned and/or operated facilities currently maintain coverage under the MSGP and two additional facilities maintain NECs. No other facilities have been identified as requiring permitting under the MSGP. Tempe identifies facility environmental regulatory requirements when operations at an existing facility change or new facilities are constructed. Tracking of MSGP and various other ADEQ and EPA regulatory requirements occurs electronically through a compliance management solution known as Intalex (<http://www.intalex.com/>).

Inventories and Mapping

Tempe's Permit contains a series of inventory and mapping requirements with various completion dates ranging from the submittal date of this report to the fourth year



annual report. Table 8 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 were needed. A status of “fourth year annual report” mapping capability is provided further in this section. Any modified maps will be provided to ADEQ with subsequent annual reports. All maps can be found in **Attachment L**. Note that all other inventories are addressed in their respective reporting sections.

Table 8: Summary of Mapping Status

Map Description	Reporting Year Map Completed	Map Name
<i>Identification and mapping of waters of the U.S. (including Tempe area canals) that may receive discharges from the MS4</i>	2010-2011	Tempe MS4 Surface Waters
<i>An up-to-date map or map(s) showing MS4 boundaries.</i>	2010-2011	All Maps
<i>An up-to-date map or map(s) showing locations where Tempe’s storm sewer discharges to waters of the U.S.</i>	2010-2011	Tempe MS4 Monitoring and Discharge Locations, Tempe MS4 Drainage System
<i>An up-to-date map or map(s) showing wet weather stormwater monitoring location(s) and the associated drainage basins. (Including acreage and land uses).</i>	2010-2011	KP-01, SR-05, SR-08, TD-01, TD-03 Stormwater Monitoring Location Fact Sheets
<i>Map of all major outfalls and other field screening points.</i>	2010-2011	Tempe MS4 Major Outfalls
<i>Map of facilities owned or operated by the MS4 that have the potential to discharge pollutants to waters of the U.S.</i>	2010-2011	Tempe MS4 Municipal Facilities
<i>An up-to date drainage system map.</i>	2010-2011	Tempe MS4 Drainage System
<i>Drainage Basins</i>	2008-2009	Tempe MS4 Stormwater Basins
<i>ARCA</i>	2007-2008	Tempe ARCA

- **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 mapping maintenance processes. If modifications are needed by the 4th year annual report, they 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% complete. There are a small number of outfalls that were outfalls that were specifically mapped for this annual report. Some fine tuning is needed to make this into an active GIS mapping maintenance process as well as some business triggers when outfalls are created, altered or removed. Expected completion date is June 30th, 2013.

- **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: 90% complete. A redesigned system that is part of the mapping maintenance process will need to be developed. Expected completion date is June 30th, 2013.

- **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 modifications are needed by the 4th year annual report, they 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 4th 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 significant 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 Q** for listing of these facilities):

- Arizona State Emergency Response Commission – (Tempe facilities subject to SARA Title III) – 361 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) – 525 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 some 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. As such, several restaurants have been inspected for stormwater compliance.

Overview of Inspection Findings and Significant Findings

Tempe Environmental Compliance Inspectors conducted 76 industrial/commercial inspections at facilities subject to SARA Title III, MSGP, and Industrial Pretreatment requirements; and 86 restaurant inspections. Due to new stormwater program implementation, restaurant inspection forms did not specify stormwater inspection criteria until June 2010 inspections, though stormwater assessments were conducted during all 86 inspections. No significant findings were observed during the course of these inspections. Industrial/commercial inspection forms can be found in **Attachment R**, and restaurant inspections can be found in **Attachment S**.

Tempe considers the following factors to have contributed to the lack of significant stormwater violations:

- Many of the inspected facilities subject to SARA requirements maintained chemicals indoors, where stormwater exposure was not a concern.



- Many of the industrial facilities inspected were pre-treatment program facilities that have been inspected for Tempe stormwater compliance on numerous occasions.

Corrective and Enforcement Actions Needed & Taken in Response to Inspections

No corrective or enforcement actions were needed or taken in response to routine industrial or commercial inspections. Please see summary of corrective and enforcement actions for various other inspections in Section C.IV.

Note that during these inspections, Tempe did identify seven (7) facilities that may have been eligible for coverage under the MSGP but had not obtained coverage or filed for a NEC. Five (5) of these facilities subsequently reported to Tempe that they had obtained the necessary coverage or certification. As a result, Tempe provided ADEQ with information for two (2) potential non-filers on August 5, 2011. See **Attachment T** 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 (1) acre or more, and those that disturb less than one (1) acre but are part of a larger common plan of development. For the 2010-2011 reporting period, Tempe has reviewed and inventoried 100% of all construction projects meeting the land disturbance criteria. As of June 30, 2011, Tempe has identified six (6) private and three (3) CIP projects requiring review inventory, prioritization, and inspection. Project inventory and inspection documents can be found in **Attachment U**.

Inspection Findings

Tempe has inspected 100% of all qualifying construction sites. Of the nine (9) sites inspected, four sites were inactive. All inspections found compliance with Tempe ordinances and no significant findings were observed. Project inventory and inspection documents can be found in **Attachment U**.

Corrective Action and Enforcement

No corrective or enforcement actions were needed or taken in response to inspections identified above. 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 for employees directly involved with construction activities received training on June 27, 2011. See Section 3.K of this report for a summary of training events, 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 V** for a copy of this ordinance. This ordinance is an effective control measure by providing containment for much of the rainfall in Tempe, and accordingly limiting discharges of pollutants to waters of the United States. Tempe's Stormwater Retention Ordinance has been in effect since 1967 and was modified in April 2004 to accommodate more dense development in and around downtown Tempe, an area designated as the Alternative Retention Criteria Area (ARCA). See **Attachment L** for a copy of an ARCA map. Outside the ARCA, all new development or substantial improvements to existing developments must provide storage of sufficient volume (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.

New for the 2010-2011 reporting period, Tempe has formalized the post-construction inspection program. The new inspection program now requires a post-construction control inspection within twelve (12) months after completion of construction.

Overview of Program

A post-construction inspection will be conducted on 100% of all permitted residential, commercial, and CIP projects that will result in a land disturbance of one (1) acre or more, and those that disturb less than one (1) acre but are part of a larger common plan of development. This post-construction inspection will be part of the warranty period inspection and will occur within twelve (12) months after completion of construction. The inspection provides 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

As of June 30, 2011, only three qualifying construction sites have completed construction. None of these sites have undergone post-construction inspections due to relatively recent construction completion. Since no post-construction inspections have occurred, no corrective or enforcement actions were needed or taken during this reporting period.

New or Revised Post-Construction Requirements

Since Tempe's last annual report, there have been no new or revised post-construction requirements related to permits the city issues. 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.

H. Outfall Inspection Program

Staff training

As identified in Section C of this report, during the 2010-2011 reporting year, Tempe's Environmental Services Section cross trained all Environmental Compliance Inspectors in stormwater competency. This two-day training event included outfall inspection procedures. Six Environmental Compliance Inspectors and one Environmental Quality Specialist attended.

Outfall inventory

Tempe has identified 41 major outfalls as defined by 40 CFR 122.26. A list identifying the outfall name, size, location (latitude/longitude), receiving water, and priority status can be found in **Attachment W**. A map of all Tempe outfalls can be found in **Attachment L**. The number of major outfalls is subject to change based upon system changes or the identification of previously unidentified outfalls.

Of these 41 major outfalls, 15 are identified as priority outfalls. This priority is based upon receiving water, history of illicit discharges or non-stormwater flow over the last five years, and any other outfall that is identified as a priority 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 or shown to be a significant



source of pollutants, elimination of illicit discharges or 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, more frequent quarterly inspections may be implemented. Each Environmental Compliance Inspector is assigned designated outfalls and is responsible for inspections at the required frequencies. Once inspections are completed, field data forms are provided to the Environmental Compliance Supervisor for review. Upon review completion, 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.

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

- **General Information**
 1. Date and Time of Inspection
 2. Name of Inspector
 3. Outfall Location/Description/Condition
 - a. Outfall ID and description (MH, channel, outfall, etc.)
 - b. Location description if not an outfall (GPS Coordinates)
 - c. Structural integrity of MS4 component
 4. Time since last measurable rain event and approximate amount (> or < 72 Hours)
 5. Watershed Use (industrial, commercial, residential, etc.)
 6. Estimated Flow Rate (if flow exists)
 7. If flow exists, determine if flow has already been shown not to be illicit or a significant source of pollutants.
 - a. If yes, document finding (i.e., tail water, TTL bypass, dechlorinated pool backwash, etc.), conduct any field screening the inspector feels may be relevant and complete inspection report.
 - b. If no, continue with full analysis of physical and chemical observations.



- **Physical/Chemical Observations**
If further screening is needed based upon General Information findings, the parameters in Table 9 will be observed or field tested and documented.

Table 9

Parameter/ Analyte	Method	Trigger
Color	Visual	“Off-Color”
Odor	Visual	Chemical, gas, or sulphur
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 or dead
Temperature	Field	Hot or cold compared to ambient
pH	Field	< 6.5 or >9 S.U.
Total Chlorine	Field	>20 ppb, >4 ppm, depending on SWQS
Copper	Field	Presence
Phenol	Field	Presence
Detergents	Field	Presence

Any flow for which the discharge is not known or at least one analytical trigger is exceeded must be screened again within a 24-hour period with a minimum period of four hours between samples.

- If upon the second screening the flow remains or the analytical trigger is still exceeded, a source identification investigation will be initiated.
- If upon the second screening the flow is absent and the analytical trigger is no longer exceeded, a screening follow-up will occur at the same location within three (3) 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 month follow-up does indicate flow or an analytical trigger exceedance, a source identification investigation will be initiated.

Findings

During the 2010-2011 reporting year, Tempe Environmental Compliance Inspectors conducted 77 outfall inspections. Completed outfall inspection forms can be found in **Attachment X**. Of these inspections, 27 were conducted at priority outfalls. Three outfalls had dry weather flows that were screened in the field. No triggers were exceeded, and the flows were determined to not be a significant source of pollutants. An additional outfall was identified as having minimal dry weather flow (wetted pipe) but was not screened as the flow was not sufficient for sample collection. This outfall remains a priority outfall. The primary source of dry weather flows has been



determined to be irrigation tail-water and Tempe Town Lake by-pass water. No illicit discharges were identified as a result of 2010-2011 outfall inspections.

I. New or Revised Ordinances, Rules, or Policies

Revised Ordinances

Tempe has not developed new or revised existing City Code. 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

Tempe has developed numerous internal procedural and guidance documents pertaining to the implementation of Permit requirements. These documents will remain in draft form until full development and approval of the SWMP.

Enforcement Response Plan

Tempe has begun drafting a new Enforcement Response Plan (ERP) as required by the Permit. A copy of this plan will be provided to ADEQ upon completion.

J. Fiscal Expenditures

Tempe's 2010-2011 reporting year expenditures related to implementation of the stormwater program has been approximated to be \$1,459,190. A more detailed analysis of fiscal expenditures can be found in Section 12 of this report.

K. Training Summary¹

Tempe coordinated nine (9) employee training events covering Permit-required training topics over the course of the 2010-2011 reporting period. A total of 203² 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 since the training event primarily focuses on pollution prevention and good housekeeping. See training summary in Table 10 for specific training details.

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

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



Table 10: Summary of Training Activities

Date(s)	Target Groups	Topic(s)	Permit Training Type	Attendees	Trainer
14-Sep through 16-Sep, 2010	<i>Environmental Compliance Inspectors, Environmental Quality Specialist</i>	Law, Industry permits, municipal permits (including IDDE), inspector protocol, construction permits, national standards, post-construction, erosion, sediment control.	IDDE, Municipal Facilities, Industrial/Commercial, Construction/ Post-construction	7	National Stormwater Center
18-Jan-11	<i>Tempe Management, Supervisors, Environmental Quality Specialists</i>	All Tempe MS4 Permit conditions, modification and requirements	Municipal Facilities	26	Tempe Environmental Services
10-Mar-11	<i>Environmental Compliance Inspectors, Environmental Quality Specialists</i>	All Tempe MS4 Permit conditions, modification and requirements	Municipal Facilities	11	Tempe Environmental Services
17-Mar-11	<i>Water Utility Services</i>	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	23	Tempe Environmental Services
22-Apr-11	<i>Parks</i>	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	49	Tempe Environmental Services
28-Apr-11	<i>Solid Waste</i>	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	44	Tempe Environmental Services
19-May-11	<i>Streets</i>	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	27	Tempe Environmental Services
27-Jun-11	<i>Engineering - CIP</i>	Municipal construction, Erosion and Sediment Controls, Maintenance Requirements for BMPs, Municipal Ordinances Related to Stormwater and Construction, Plan Review Procedures, Grading and Drainage Design Standards, Requirements for Structural and Non-structural BMPs on Construction Sites, Inspection Procedures, Enforcement Procedures, Post-construction Stormwater Controls, Post-construction Inspection Procedures	Construction/Post-construction	8	Tempe Public Works Engineering
27-Jun-11	<i>Engineering - Private Development</i>	Private development, 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	8	Tempe Public Works Engineering
Total Number of Training Events:			9		
Total Number of attendees:			203		



4. Numeric Summary of Stormwater Management Program Activities

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

Stormwater Management Practice or Activity:	Annual Reporting Year (July 1 – June 30)				
	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				
Number of employees attending training	7				
2. Spill Prevention					
Number of municipal facilities identified with hazardous materials	10				
Number of spills at municipal facilities with hazardous materials that occurred in outside areas	0				
Number of facility assessments completed (<i>identify any issues found requiring follow-up in narrative and summarize new practices to minimize exposure</i>)	29				
Date of last review of HWMP (<i>identify committee participant with stormwater expertise in narrative</i>)	5/11/2011				
3. Outfall Inspections					
Total number inspected (<i>attach or forward electronic copy of inventory or map of major outfalls and priority outfalls</i>)	77				
Number of 'priority outfalls' identified to date (<i>summarize findings and follow-up actions in narrative</i>)	15				



Environmental Services Section

Number of 'priority outfalls' inspected <i>(summarize findings and follow-up actions in narrative)</i>	27				
Number of dry weather flows detected	4				
Number of dry weather flows investigated	0				
Number of major outfalls sampled	3¹				
Number of illicit discharges identified	0				
Number of illicit discharges eliminated	0				
Amount (percentage, linear miles, etc.) of storm drain inspected	2349.5 feet²				
Number of storm drain cross connection investigations	0				
Number of illicit connections detected	0				
Number of illicit connections eliminated	0				
Number of corrective or enforcement actions initiated within 60 days of identification	8				
Percent of cases resolved within one (1) calendar year of original enforcement action	8				
Number of illicit discharge reports received from public	36				
Percent of illicit discharge reports responded to	100				
Percent of responses initiated within three (3) business days	100				
Municipal Facilities					

¹ Field analysis was conducted on three dry weather flows which were determined to not be a significant source of pollutants. The fourth dry weather flow was a "wetted pipe" which did not allow for sample collection.

² CCTV inspections only.



Environmental Services Section

1. Employee Training					
Number of training events <i>(dates and topics to be included in narrative)</i>	6				
Number of staff trained	180				
2. Inventory, Map, or Database of MS4 Owned & Operated Facilities					
Total number of facilities on inventory	140				
Date identification of "higher risk" facilities completed ¹	In process				
Date prioritization of municipal facilities completed	In process				
3. Inspections					
Miles of MS4 drainage system prioritized for inspection	Footnote²				
Miles visually inspected ³	6.44 Miles				
Number of municipal facilities inspected ⁴	29				
Number of 'higher risk' municipal facilities inspected	0				
Number of 'higher risk' municipal facilities found needing improved stormwater controls	0				
4. Infrastructure Maintenance					
Linear miles of drainage system cleaned each year <i>(city to maintain records documenting specific street cleaning events)</i>	13,440				
Record amount of waste collected from street and lot sweeping <i>(reported in pounds, gallons, etc.)</i>	714.70 Tons				

¹ Activity due date is January 3, 2013.

² Prioritization schedules are being developed in conjunction with the SWMP, which will be finalized in 2012.

³ Includes CCTV and above-ground linear inspections of the drainage system. Does not include cursory street inspections.

⁴ This numeric parameter was added by Tempe to provide a more detailed explanation of the municipal inspection program.



Environmental Services Section

Total number of catch basins ¹	367				
Number of catch basins cleaned	90				
Amount of waste collected from catch basin cleaning (tons)	67				
Industrial and Commercial Sites Not Owned by the MS4					
Number of training events for MS4 staff	1				
Number of municipal staff trained	7				
Number of industrial facilities inspected (see Appendix A, Part V.B)	76 ²				
Number of corrective or enforcement actions initiated on industrial facilities	0				
Percentage of cases resolved under the ERP within one (1) calendar year of original enforcement action	N/A				
Construction Program Activities³					
Number of training events for MS4 staff <i>(include topics in narrative summary)</i>	3				
Number of municipal staff trained	23				
Number of construction/grading plans submitted for review	9				
Number of construction/grading plans reviewed	9				
Number of construction sites inspected	9				
Number of corrective or enforcement actions initiated on construction facilities <i>(identify the type of actions in narrative summary)</i>	0				

¹ Inspected, includes other stormwater infrastructure such as drywells, bubbler boxes, inlets, etc.

² Number exceeds prorated Permit requirement and excludes restaurant inspections.

³ Includes private and CIP activities.



Environmental Services Section

Post Construction Program Activities					
Number of post-construction inspections completed	0				
Number of corrective or enforcement actions initiated for post-construction activities <i>(identify the type of actions in narrative summary)</i>	0				



5. Evaluation of the Stormwater Management Program

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

The issuance of Tempe's Permit came at a time of large scale municipal restructuring and downsizing due to economic conditions that ultimately required "doing more with less." Tempe took the issuance of this new Permit as an opportunity to galvanize numerous restructured workgroups around a common goal of city-wide compliance with Permit conditions. After months of inclusive goal setting and significant achievements, Tempe's stormwater program is on path to streamline various city processes, increase operational efficiencies with remaining resources, and reduce historic redundancies while meeting stormwater regulatory mandates in an economically responsible manner. Tempe's new stormwater program will be described in the SWMP which is due for completion in early 2012.

Tempe's program implementation progress has met or exceeded Permit conditions in all areas. Tempe's successes include the following:

- Equipment upgrades to four (4) monitoring stations.
- Ongoing design/construction at the fifth monitoring station.
- Program implementation city-wide.
- Implementation of a new municipal stormwater inspection program.
- Implementation of an enhanced municipal infrastructure inspection and cleaning program.
- Implementation of an enhanced industrial/commercial inspection program.
- Implementation of an enhanced construction and post-construction program.
- Implementation of new record keeping and tracking mechanisms.
- Enhanced stormwater training program.
- Enhanced public participation programs.
- Development of new laboratory stormwater field QA/QC and sampling collection procedures.
- Internal consistency pertaining to chemical handling, storage, spill response, and disposal.
- Ongoing internal development of a pollutant loading model.
- Ongoing mapping improvements.
- Updated MS4 mapping.
- Ongoing ERP development.
- Ongoing SWMP development.

Tempe can assume that implementation of many of these stormwater management practices has effectively reduced the discharge of pollutants to and from the MS4. This reduction,



however, is not 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. ADEQ has requested that monitoring data be utilized to determine the effectiveness of stormwater BMPs. Tempe's historic monitoring results have not indicated large concentrations of pollutants or fluctuation in concentration based upon BMP implementation. However, while Tempe's outfall monitoring program attempts to isolate *land* uses in Tempe, individually implemented BMPs are not isolated using an outfall approach. Tempe will continue to review future analytical data in the effort to identify such correlations.

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

The City of Tempe is in the process of developing a new SWMP that is scheduled for completion in early 2012. Upon completion, the SWMP will be submitted to ADEQ for review. Any new control measures will be consistent with Permit requirements and incorporated into this plan. Since development of the new SWMP has not been completed, there are no additions of new control measures to report.

B. Addition of Temporary Control Measures

The City of Tempe is in the process of developing a new SWMP that is scheduled for completion in early 2012. There have been no temporary control measures added to the SWMP during the 2010-2011 reporting year.

C. Increase of Existing Control Measures

The City of Tempe is in the process of developing a new SWMP that is scheduled for completion in early 2012. Any increased control measures will be consistent with Permit requirements and identified in the new SWMP.

D. Replacement of Existing Control Measures

The City of Tempe is in the process of developing a new SWMP that is scheduled for completion in early 2012. Any replacement of existing control measures will be consistent with Permit requirements and identified in the new SWMP; accordingly, there are no replacements of existing control measures to report at this time.



7. Monitoring Locations

This section requires a brief description of each stormwater monitoring location, including the following information. (Subsequent annual reports will provide informational changes or updates.)

- 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

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

Please see Outfall Fact Sheets in **Attachment L** of this report.

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’s new stormwater Permit was issued on November 24, 2010. On December 30, 2010, Tempe appealed sampling provisions of this Permit, asserting that additional time should be allowed to upgrade sampling equipment at four (4) sampling locations and construct a new monitoring station at one (1) location. Pursuant subsequent discussions resulting from this appeal, ADEQ modified Section 7.3.3 to require Tempe to have a minimum of two (2) of the five (5) sample locations identified in Table 1 of the Permit operational and sampling enabled by June 1, 2011. The remaining sample locations are to be operational and sampling enabled by November 1, 2011. Tempe is also required to make up for stormwater sampling that could have occurred during the equipment upgrade and construction period. Any needed make-up sampling will occur during subsequent summer and winter wet seasons if two measurable storm events occur during those seasons. The total number of sampling events required by the Permit was unchanged by the appeal.



Tempe has successfully met the June 1, 2011, deadline and is on schedule to meet the November 1, 2011, deadline. All stations, with exception of TD-01, were successfully installed, data transmission tested, and operational on the dates listed below.

- KP-01 – May 18, 2011
- SR-08 – May 19, 2011
- TD-03 – May 19, 2011
- SR-05 – May 20, 2011

Under the terms of the modified Permit, Tempe has no storm event records or monitoring results to report for the new Permit.

Tempe conducted monitoring and testing as required by the previous Permit but suspended these sampling events in accordance with directions from ADEQ following the informal settlement conference arising out of Tempe’s Permit appeal. Below is a summary of 2010 sampling events conducted under Tempe’s previous Permit. All laboratory results can be found in **Attachment Y** of this report. Since this monitoring was collected under significantly different Permit requirements (i.e., no flow equipment, 0.2 inch rain events, up to six-hour discharge duration, etc.), which are not applicable to existing Permit conditions, ADEQ has previously indicated that information collected from these events is not representative of stormwater discharges and will not be used for ADEQ purposes. Accordingly, Tempe has not undertaken extensive review or analysis of resulting data. If ADEQ would like to see an assessment of data taken under provisions of the previous Permit, please advise.

Table 11: Summary of MS4 Sampling Events (Old Permit)

Summer				
Date	TD03	SR05	SR08	KP01
7/28/2010				X
7/29/2010		X	X	
8/8/2010			X	
8/17/2010		X		X
Winter				
Date	TD03	SR05	SR08	KP01
12/29/2010	X	X	X	X
Total Annual	1	3	3	3



9. Summary of Monitoring Data (By Location)

Tempe has summarized monitoring data for sampling that occurred under the previous Permit on forms prepared for the currently effective Permit. These forms provide the outfall identification number, the receiving water, designated uses, and the lowest surface water quality standards applicable to the receiving water compared to analytical results for the stormwater samples collected for each season. These forms can be found in **Attachment Z**.

Note that sampling events identified on these forms do not reflect compliance sampling events required under the existing Permit and will not be substituted as such. Tempe requests that ADEQ review these forms and verify accuracy of the SWQS identified.

Permit Section 7.5.4(1) requires Tempe to prepare standard operating procedures for all analyses conducted in the field, whether or not a procedure is established in 40 CFR 136, and provide a copy of these procedures in the first annual report. To achieve this requirement, Tempe has prepared a Field Quality Assurance Manual, which can be found in **Attachment AA**.

10. Assessment of Monitoring Data

A. Stormwater Quality

In accordance with the Permit, Section 8.8.8(11), assessment of monitoring data is required beginning with the annual report for reporting year 2011-2012. Nonetheless, compared to previous sampling events, the information collected pursuant to the previous Permit appears consistent with historic results.

B. Water Quality Standards (WQS)

Stormwater monitoring data conducted consistent with Tempe's previous Permit has been compared to SWQS for the applicable receiving water and can be found in the forms located in **Attachment Z**.

C. Exceeding a WQS

Tempe has identified two constituents exceeding the applicable SWQS. Both copper and zinc were identified as being slightly higher than the standards at one or more monitoring locations. Since this sampling was conducted under the previous Permit and not consistent with new sampling requirements, Tempe has not further evaluated this information since comparison to future data would not be relevant. Any future exceedances resulting from compliance monitoring will be evaluated and the following information will be provided:

- Sampling date
- Monitoring location (outfall identification number)
- Receiving water and water quality standard which was exceeded

- Outfall monitoring results (laboratory reports)
- A description of the circumstances that may have caused or contributed to the exceedance of an applicable water quality standard
- If a pollutant is noted at levels above the WQS at a particular monitoring location, more than 1X ('reoccurs') per wet season; describe actions taken to determine the source(s) of the pollutant per Sections 4.3 and 4.4 of the Permit. Also state any proposed follow-up actions or additional and/or revised management practices or pollution controls to prevent the discharge from causing or contributing to an exceedance of a water quality standard in the future
- A schedule for implementing the proposed follow-up, stormwater or non-stormwater management practices or pollution controls

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.

In accordance with the Permit, Section 8.1.1(12), Tempe is required to provide pollutant loading estimates beginning with the 2011-2012 annual report. Please note that Tempe is currently developing a new model to address this requirement.

12. Annual Expenditures

Tempe's stormwater program expenditures for the July 1, 2010 – June 30, 2011, reporting period is conservatively estimated to be \$1,459,190. Funding for the program comes from Tempe's CIP Fund and various Public Works Department funds. Further 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 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 is reflected as such.



- Purchase of a new street sweeper was funded largely by HURF funds and is not a recurring expenditure.
- Employee attendance at training events is not incorporated as a stormwater expenditure, though cost to develop and conduct training is considered.

Tempe's stormwater expenditures reflect an increase over the 2009-2010 reporting year. The following considerations help to explain this increase.

- Permit negotiations, comments and appeal increased administrative costs (non-recurring).
- City-wide Permit implementation and SWMP development required a significant increase in man hours (recurring for half of the 2011-2012 reporting year).
- The industrial/commercial inspection program has been significantly expanded to meet Permit requirements.
- Stormwater sampling equipment was purchased during the 2010-2011 reporting year (non-recurring).
- Accounting for other programs (construction, post-construction, streets, etc.) is now capturing a more representative financial impact.
- Purchase of a new street sweeper during the 2010-2011 reporting year (non-recurring).

Tempe Public Works Department budgets have decreased significantly due to current economic conditions. Only three stormwater component budget items were specifically increased. These are as follows:

- Funding used primarily for stormwater public participation and outreach has been increased by \$5,000.
- Tempe's permitting fee budget increased in the amount of \$10,000 due to ADEQ's new annual MS4 Permit fee.
- Funding in the amount of \$128,000 has been allocated for construction of one new monitoring station and other monitoring station safety upgrades.

Tempe is not estimating a total budget increase for the 2011-2012 reporting year; however Tempe does expect non-recurring costs identified above to offset funding required for any 2011-2012 Permit implementation needs. Tempe cannot accurately estimate the totality of budget changes and cost allocations since the new stormwater program has not been fully implemented and has not experienced a full reporting year under new Permit conditions. As indicated in Section 5 of this report, Tempe will continue to streamline various city processes and increase operational efficiencies to ensure that all stormwater regulatory mandates are met in an economically responsible manner. A full summary of this Fiscal Analysis can be found in Table 12.

Table 12: Tempe MS4 Annual Expenditures and Fiscal Analysis Fiscal Year 2010/2011

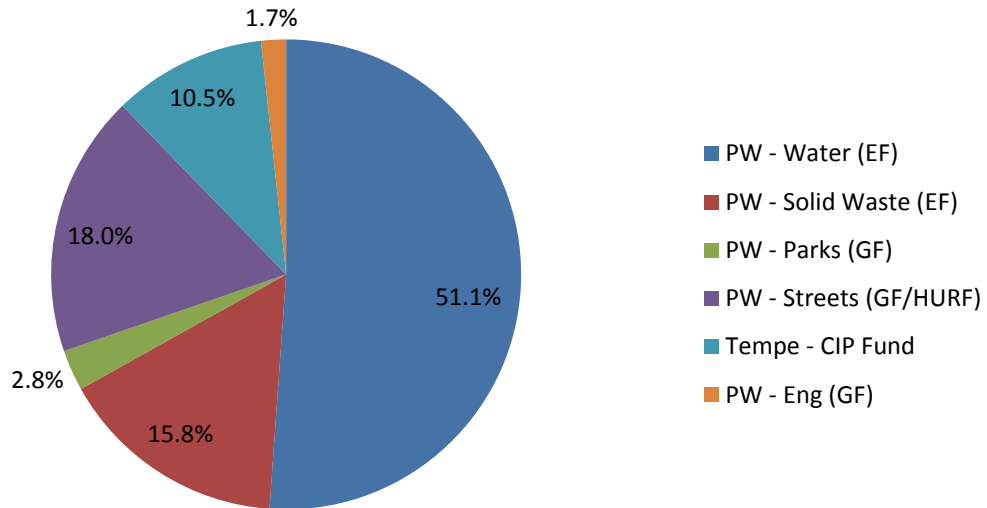


Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Program administration (annual reporting, SWMP development, implementation, training, etc.)	\$267,176	PW - Water (EF)	Cost allocation charge for 1.75 EQS/EPs
Legal Counsel	\$7,760	PW - Water (EF)	Legal counsel - time
Public Education and Outreach		PW - Water (EF)	
<i>Materials</i>	\$2,610		Handouts and BMP brochure printing
<i>Memberships (i.e. STORM)</i>	\$2,500		STORM Membership
Public Involvement and Participation		PW - Solid Waste (EF)	
<i>Hazardous Mat Safety/HPCC</i>	\$230,073		1/2 Full Operational Expenditures
<i>Adopt-A-Park/Volunteer Prgm</i>	\$38,000	PW - Parks (GF)	Supplies & Equipment 40% time
<i>Adopt-A-Street</i>	\$1,400	PW - Streets (GF)	Stormwater involvement only
Training (external)	\$9,000	PW - Water (EF)	External Stormwater Training
Capital expenses for new, replaced, or repaired stormwater sewers, capital for facility replacement.	\$153,911	Tempe - CIP Fund	Repair/Replace storm sewer
Operational expenses for cleaning and/or repairing stormwater sewers.			
<i>Cleaning (internal)</i>	\$203	PW - Water (EF)	Internal cleaning labor
<i>Cleaning (contract)</i>	\$38,823	PW - Water (EF)	Contract cleanings
Engineering Capital and Private Programs (program development, construction/post construction programs)	\$24,965	PW - Eng (GF)	Time (5 engineering staff)
Stormwater GIS development, maintenance, and operations, staff time, etc.	\$11,300	PW - Water (EF)	Time (GIS staff)
Inspection and enforcement (outfalls, IDDE, industrial/commercial, etc.)	\$103,961	PW - Water (EF)	Inspections - time and equipment
Monitoring		PW - Water (EF)	
<i>Analytical</i>	\$8,118		Lab testing cost
<i>Staff Time</i>	\$25,000		Staff sampling and implementation
<i>Equipment</i>	\$67,342		Sampling Equipment
CCTV	\$3,600	PW - Water (EF)	Inspection - time and equipment
Parks	\$3,100	PW - Parks (GF)	Inspection - time and equipment
Streets			
<i>Inspections</i>	\$110	PW - Streets (GF/HURF)	Time
<i>Street sweeping</i>	\$198,671	PW - Water (EF)	4 FTEs - Stormwater Expenditures
<i>Equipment</i>	\$261,567	PW - Streets (GF/HURF)	Street sweeper purchase
Total	\$1,459,190		



A summary of funding sources can be found below.

Stormwater Program Funding Sources by Percent



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 a missing attachment or would like paper copies of any attachment, please feel free to contact Tempe’s stormwater representative. Table 13 summarizes the attachments.



Table 13: Summary of Report Attachments

Attachment Letter Designation	Attachment Name	Attachment Letter Designation	Attachment Name
A	OUTREACH 2010-2011	O	HWMP 2011
B	STORM 2010-2011 ANNUAL REPORT	P	COT MS4 PESTICIDE HERBICIDE PLAN
C	TRAINING 2010-2011	Q	MSGP-SARA INVENTORY 2011
D	ESS ARCA INFRASTRUCTURE INSPECTIONS	R	INDUSTRIAL COMMERCIAL INSPECTIONS 2010-2011
E	CONTRACTED STORMWATER CLEANING 2010-2011	S	RESTAURANT INSPECTIONS 2010-2011
F	PARKS AND OPEN SPACE INFRASTRUCTURE INSPECTIONS	T	NON-FILERS 2011
G	STREETS INFRASTRUCTURE INSPECTIONS 2011	U	CONSTRUCTION INVENTORY AND INSPECTION 2010-2011
H	WUD ENG CCTV REPORTS 2011	V	TEMPE CITY CODE
I	CALL-OUT SUMMARY 2010-2011	W	OUTFALL INVENTORY 2010-2011
J	ENFORCEMENT 2010-2011	X	OUTFALL INSPECTIONS 2010-2011
K	MUNICIPAL FACILITY INVENTORY 2011	Y	LAB REPORTS (OLD PERMIT) 2010
L	MAPS 2010-2011	Z	DATA SUMMARY SHEETS (OLD PERMIT) 2010
M	MUNICIPAL FACILITY INSPECTIONS 2011	AA	FIELD QUALITY ASSURANCE MANUAL
N	FACILITY CHEMICAL HANDLING AND SPILL PROCEDURES		