

AZPDES

Municipal Stormwater Permit AZS000001-2010

Fourth Annual Report
September 2015

Prepared By:

The City of Tucson
Department of Transportation
Stormwater Management Section

In Co-operation with the following

City Departments:

GENERAL SERVICES

ENVIRONMENTAL SERVICES/HOUSEHOLD HAZARDOUS WASTE

FIRE

HUMAN RESOURCES/CENTRAL SAFETY SERVICES

PARKS AND RECREATION

PLANNING AND DEVELOPMENT SERVICES

WATER

TRANSPORTATION/ENGINEERING AND STREETS & TRAFFIC MAINTENANCE DIVISION

AND

PIMA ASSOCIATION OF GOVERNMENTS

TUCSON CLEAN AND BEAUTIFUL

UNIVERSITY OF ARIZONA

The City of Tucson's
Stormwater Annual Report
(Fiscal Year 2014–15)

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Annual Report Form
For Phase I MS4s - Due September 30th Each Year

PART 1: GENERAL INFORMATION

- A. Name of Permittee: City of Tucson
- B. Permit Number: AZS000001-2010
- C. Reporting Period: July 1, 2014 - June 30, 2015
- D. Name of Stormwater Management Program Contact:
Estevan C. Tineo, P.E., Engineering Project Manager
Mailing Address: P.O. Box 27210
City: Tucson Zip: 85726-7210 Phone: (520) 837-6280
Fax Number: (520) 791-4238 Email: Estevan.Tineo@tucsonaz.gov
- E. Name of Certifying Official: Daryl W. Cole
Title: Director of Transportation
Mailing Address: P.O. Box 27210
City: Tucson Zip: 85726-7210 Phone: (520) 837-6692
Fax Number: (520) 791-4238 Email: Daryl.Cole@tucsonaz.gov

PART 2: ANNUAL REPORT CERTIFICATION

The Annual Report Form 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

PART 3: SUMMARY OF STORMWATER MANAGEMENT ACTIVITIES

Overview

The City of Tucson was covered under Municipal NPDES Stormwater Permit AZS000001 from March 19, 1997 to August 31, 2011. During that time period, the City developed several programs to improve stormwater quality and maintain compliance with the permit. On September 1, 2011, ADEQ issued the City of Tucson AZPDES Stormwater Permit AZS000001-2010. Most of the programs developed under the previous permit are currently utilized to protect stormwater quality. The City is shifting the planning and construction of main arterial routes to include Green Infrastructure concepts. Additionally, Low Impact Development is becoming part of the culture in design. Other requirements under the new permit are utilized to fine tune the stormwater program. This is the fourth reporting year of its five-year term. The City has completed the fourth year requirements as summarized in this annual report.

I. Public Education and Outreach

A. REPORT OUTREACH EVENTS AND TOPICS

This section identifies the City departments involved in public outreach activities that enhance public awareness and understanding of stormwater pollution. In addition to City departments, regional assistance is provided by Pima Association of Governments (PAG) and Tucson Clean and Beautiful. Outreach Topics and numbers reached are presented in Table I.A.i., Stormwater Public Awareness Program Activities.

1. Stormwater Management Program

The Stormwater Management Program's Stormwater Public Awareness Program encouraged the public to keep stormwater clean and report stormwater concerns. The program included messages about flood safety, water harvesting, and promoting the preservation of naturally vegetated washes.

The *Water Harvesting Guidance Manual* is available on the City's website, and in hard copy. This guidance manual was designed to assist the development community in complying with Land Use Code requirements to maximize use of water harvesting in new development. Water Harvesting is a low-impact development Best Management Practice (BMP) that promotes infiltration and serves to reduce pollutants in stormwater runoff. In addition, residents with existing homes or businesses can use the *Water Harvesting Guidance Manual* to retrofit their property to harvest stormwater. This year, 100 *Water Harvesting Guidance Manuals* were distributed to the general public.

In the City's ongoing catch basin identification program, catch basins located where there is a high potential for illegal dumping are identified with a weather-resistant metal disk bearing the slogan, "Only Rain in the Drain."

Included in this report (See Appendix) is a drainage infrastructure map depicting all stormdrains, washes, and detention basins that the City Department of Transportation maintains within the City limits. In addition, the City has mapped

all stormwater quality infrastructure on a GIS based mapping system. This includes the following elements:

- FSO Sites
- Rain in the Drain discs
- Sampling station sites

The GIS sampling data includes the contributing drainage areas for each site. This GIS information can be accessed in the City portal.

In order to inform citizens about the importance of preserving naturally vegetated watercourses, the City has continued a program to install signs that identify washes by name at significant road crossings. If the public is aware of the location and name of their local washes, citizens may be more likely to protect them as a natural resource. The wash signs get damaged periodically and are replaced. These wash sign locations are included in a layer on the City's GIS Stormwater Map.

In this report period, the Stormwater Management Program distributed outreach materials at: Ward IV Back to School Bash, Tucson Children's Earth Day, Cyclovia, and Monsoon Safety Awareness Week that were intended to encourage the public to prevent stormwater pollution. The message "Only Rain in the Drain" was used on a variety of promotional give-away materials as listed in Table I.A.i.

The Desert Wash Safety Activity Book, that presents basic stormwater quality messages, was provided to younger residents and continued to be popular among elementary schools, recreation centers, libraries and other facilities. These activity books were distributed in both English and Spanish.

Stormwater in the Desert, another book produced by the City that is geared toward students in middle school blends aspects of the Water Harvesting Guidance Manual with messages about flood safety and stormwater quality. This middle school activity book introduces students to complex technical concepts and includes interactive activities using the City's website, particularly the GIS and Stormwater Management Program websites. During this reporting period, the books were delivered to students and teachers at schools in the Tucson area. The book is keyed to Arizona's educational curriculum guidelines and also includes a Teacher's Guide.

In this report period, Stormwater Management Program continued to distribute construction information packets containing guidance on complying with the AZPDES General Permit for Construction. Topics included are listed in Table I.A.ii.

2. Planning and Development Services

The Planning and Development Services Department continued outreach through daily interactions with counter staff, handout materials and monthly meetings with contractors and developers. Post-construction maintenance of retention/detention basins was encouraged through direct mailings and inspections. Staff also attended

Southern Arizona Homebuilders Association (SAHBA) meetings. Table I.A.iii., includes outreach topics and numbers reached.

3. Tucson Water

Tucson Water engages in a wide variety of educational outreach activities intended to increase awareness and encourage citizen action in water-related areas. The training and workshops reported in Table I.A.iv., focused on water harvesting techniques that may improve stormwater quality.

4. Other Outreach Activities

Other outreach activities promoted by City of Tucson departments, Ward Offices, and outside agencies included:

- Poster contest held by the City of Tucson Environmental Services Department for Middle School students highlighting the importance of recycling.
- Recycling Collection Event and Recycling Facility Open House held by Environmental Services.
- Household Hazardous Waste expanded collection sites and on demand home pick-up
- Santa Cruz River Cleanup organized by Tucson Clean and Beautiful and Ward 1.
- Rainwater/Stormwater Professionals Network Meetings held by the Water Resource Research Center
- ADEQ - Hazardous Waste Workshops.

Newsletters published by the Ward Offices contained information about other public outreach events and volunteer opportunities. The following are a few examples:

- News about Watershed Management Group.
- Beat Back Buffelgrass events.
- Tree recycling (Christmas Trees).
- Information about Rainwater Harvesting Rebates offered by the Water Department.
- Volunteer opportunities with Tucson Clean and Beautiful.

5. Pima Association of Governments Stormwater Management Working Group

In 1997, Pima Association of Governments (PAG) established the Stormwater Management Working Group (Working Group) in an effort to help jurisdictions coordinate stormwater permit negotiations and to provide unified comments on regulations and rules. The group has grown into an ongoing forum for planning, program development, information exchange and cooperative outreach projects. The Working Group and PAG initiated an annual multi-media outreach campaign in 2003. The campaign is funded through Federal Highways Administration funds for Surface Transportation, which are allotted for stormwater pollution abatement.

The campaign adopted the “Clean Water Starts with Me” slogan in 2008, and the phrase continues to gain familiarity in the region. The successful message has been repeated by other entities across the state. Artwork and style complements the imagery used by the local jurisdictions in school programs and “Only Rain in the Drain” efforts for consistency across the region.

The information included in this report describes the implementation, progress and significant developments of the PAG stormwater outreach program during FY 2014-15. The activities are detailed as to the type of outreach event, topics addressed, type of material, vendor name, cost and the measured effect though an estimate of the number of people reached, number of materials distributed, audience targeted, frequency of advertising and schedule of activities.

The Pima Association of Governments (PAG) addresses several required outreach topics within local jurisdiction stormwater permits. The topics emphasized this fiscal year were Low Impact Development (LID), rainwater harvesting and water conservation. Focusing on a theme each year helps us to develop new messages, ads, graphics and partnerships for the annual topic.

Permit Topics Covered:

- Animal Waste (ads, stickers, watershed map/poster, infographics, web, Facebook)
- Management and disposal of used oil including proper washing of vehicles (ads, rack cards, watershed map/poster, web, Facebook)
- Residential practices, including LID methods (ads, rack cards, bookmarks, watershed map/poster, coloring sheets, outreach signage, web, Facebook)
- Post Construction LID/ Rainwater Harvesting (ads, rack cards, bookmarks, watershed map/poster, coloring sheets, web, Facebook)
- Improper dumping, litter and illicit discharges (ads, coloring sheets, trash bags, outreach games, infographics, web, Facebook)
- Construction-related ordinances, grading, illicit discharges, spill prevention, hazardous waste, proper disposal and storage, BMPs and SWPPPS (ads, rack cards, watershed map/poster, web, Facebook)
- Pesticides, herbicides and fertilizer (ads, watershed map/poster, web, Facebook)

Permit Target Groups which PAG reaches:

- General Public (back of bus ads, magazines, watershed map/poster, rack cards, bookmarks, dog stickers, trash bags, sunshades, Mrs. Green, infographics, website, Facebook, outreach events)
- Residential (dog stickers, bookmarks, proper disposal/storage tips on website)
- Home Owners (rack cards, watershed maps/posters, yard tips on website)
- Schools/Children (activities, coloring sheets & word search handed out at events; Arizona Project WET partnership; Facebook; web)
- Development Community, Construction Site Operators (SAHBA meetings, web, materials, vehicle magnets for stormwater inspectors)

New and Expanding Efforts:

Many aspects of the outreach campaign continued from previous years and some efforts grew. PAG reached new audiences through updated “De-pollute your commute” rack cards, new infographics for social media postings, new Spanish language rack cards, new water footprint bookmarks, fold-out maps featured in Edible Baja Arizona and full-color ads on the back of Sun Tran buses. We also expanded our outreach program by participating in new outreach events, including Meet Me at Maynards Trash Night and the National Weather Service’s Monsoon Safety Fair.

We continued to work with Arizona Project WET to enhance their STEM-based, state approved stormwater curriculum for teachers and to expand Arizona Project WET’s water festival efforts to reach new PAG member jurisdictions including Marana and Sahuarita. This enhanced our outreach to children and students. This outreach method was enhanced by the Town of Marana’s additional sponsorship funds and Pima County’s presentations to the teacher academy.

Back of bus advertisements and magazine ads were run throughout the monsoon season, starting in July and running as late as October 2014. Spanish-language rack cards, clean water posters, magazine ads and an article in Arizona Bilingual were used to reach Spanish-speaking populations.

Year-Round Outreach Program:

Transportation-themed rack cards, water footprint bookmarks, watershed pocket guides, watershed fold-out maps, “Scoop the Poop” stickers, clean air/water sunshades, Facebook and website were part of the year-round outreach program. Rack cards, bookmarks, watershed pocket guides and fold-out maps were distributed at special events and libraries. Facebook advertising was used on facebook.com/PAGstorm to increase traffic to the PAGstorm.com website, while regular Facebook postings provided stormwater-related news and pollution prevention information to the page’s followers. PAGstorm.com contains detailed information defining stormwater, describing actions to prevent pollution from common contaminants and providing activities for both children and adults, such as coloring sheets and videos. The number of web hits increase throughout the year, and with each passing year the campaign reflects great coverage and response.

Pollutants addressed through the website include vehicular fluids, soap, litter, animal waste, household hazardous waste, herbicides, pesticides, fertilizer, paint, landscape waste, illegal dumping and household hazardous waste. The website also explains how to report activities like illegal dumping and how to do proper disposal of household hazardous waste. Additional webpages go into detail about how to practice “Low Impact Development” (LID) and “Green Stormwater Infrastructure” (GI) through rainwater harvesting.

Watershed Awareness and Illegal Dumping - The Focus Topics of FY 2013-14:

Beginning in FY 2013-14, the stormwater outreach campaign added extra emphasis and expanded the message for pollution prevention related to watershed awareness and illegal dumping. Watershed pocket guides in particular were designed to increase familiarity with the regional watershed and provided awareness of the watershed-wide impacts of stormwater pollution. Trash bags were developed through a partnership with Tucson Clean & Beautiful for use at cleanup events region-wide. An outreach and marketing partnership was also formed with Household Hazardous Waste. This fiscal year, PAG continued to emphasize watershed awareness and illegal dumping through magazine ads, watershed pocket guides, fold-out maps, trash bags, events, Facebook ads, Facebook posts and the website. In June 2015, PAG joined Meet Me at Maynards and Tucson Clean & Beautiful for a Clean Water Starts with Me "Trash Night." Once a month, Meet Me at Maynards volunteers pick up litter around downtown Tucson. PAG provided a box of trash bags, raffle prizes (reserved for volunteers who picked up litter) and outreach materials for the June and July 2015 clean-ups.

Proper Management and Disposal of Used Oil; Spill Clean-Up - The Focus Topics of FY 2012-13:

In FY 2012-14, the stormwater outreach campaign focused on the proper management and disposal of used oil, and methods for cleaning up spills. PAG developed the slogan "de-pollute your commute" to encourage people to take steps to prevent vehicle pollution. This fiscal year, PAG continued to emphasize transportation pollution, including used oil and spill clean-up, through magazine ads, back of bus ads, watershed pocket guides, fold-out maps, transportation-themed rack cards, Clean Air/Water sunshades, trivia questions at outreach events, Facebook ads, Facebook posts and the website.

Construction, Development and Business Industries Outreach:

PAG provided stormwater pollution prevention outreach to the construction industry and businesses through materials and on the Web. PAG also reached out to the construction industry by participating in meetings of the Southern Arizona Home Builders Association (SAHBA) Technical Committee, where information also was regularly shared.

PAG's website offers a number of construction industry resources, such as ADOT Best Management Practices (BMP) Manual, an erosivity calculator, example SWPPPS, inspection checklists and local contacts. Our construction resources that aid the industries navigation of local ordinances and state regulations are available year-round at PAGstorm.com/Construction. This is a great one-stop place for links to local stormwater ordinances throughout the region, Notices of Intent (NOI), Notices of Termination (NOT), rain gauges, templates and manuals, permits and past PAG seminar presentations. The general public outreach pages on PAGstorm.com also provide information for business owners and covers maintaining company vehicles, equipment and chemical storage and maintaining dumpsters.

To address the need to address field staff in addition to construction managers, we began plans for on-site training for construction professionals in the field. We coordinated two SWM WG meetings to begin creating a template that can be used by each MS4 in the region with shared and consistent resources. The Town of Marana and a SAHBA representative led this effort for the SMW MWG. PAG will support these trainings with educational materials and stakeholder outreach.

Table I.A.v., illustrates the many topics and multiple media used by PAG in this report period to raise awareness of stormwater issues.

6. University of Arizona, Cooperative Extension Service

In the past year, faculty at the University of Arizona, Cooperative Extension Service trained over 1,700 IPM end users at over 35 meetings, conferences and workshops, delivering 140 continuing education credits. Published at least 25 pest management related Extension publications, including 1 field crops IPM short and 25 Veg IPM Updates. Our monthly newsletter for School and Home IPM reaches over 4,000 people monthly. Contributed at least 30 articles to Western Farm Press (over 20,000 subscribers), several articles for UA News and other media outlets. The number of people who received training is tabulated in Table I.A.vi.

Table I.A.i

City of Tucson-Department of Transportation		
Target Group	Outreach Materials	Number
General Public	• Water Harvesting Guidance Manual	100
	• Swimming Pool Discharge Flyer	20
	• Yard and Landscape Waste Disposal brochure	25
	• Leaky vehicle flyer	25
	• Promotional materials given away at Public Outreach Events	
	○ July 27 - Ward IV Back to School Bash	789
	○ April 19 - Cyclovia	
	○ April 12 - Tucson Children's Earth Day	
○ June 7 - Monsoon Safety Awareness Week		
Elementary Schools	• <i>Desert Wash Safety Activity Book</i> for grade school children	
	○ Stormwater runoff issues and residential stormwater management practices	1,261
	○ Illicit discharges and illegal dumping	
Middle Schools	• <i>Stormwater in the Desert</i> book for middle school children and interactive website	
	○ Stormwater runoff issues and residential stormwater management practices	150
	○ Potential water quality impacts of application of pesticides, herbicides and fertilizer	
	○ Potential impacts of animal waste on water quality	
	○ Illicit discharges and illegal dumping	
	○ Spill prevention, proper handling and disposal of toxic and hazardous materials	
	○ Proper management and disposal of used oil	

Table I.A.ii

City of Tucson-Department of Transportation		
Target Group	Outreach Materials	Number
Construction Site Operators, Development Community	• Construction information packets	1
	○ Planning ordinances and grading and drainage design standards for stormwater management in new developments and significant redevelopments	
	○ Municipal stormwater requirements and management practices for construction sites	
	○ Illicit discharges and proper management of non-stormwater discharges	
	○ Spill prevention, proper handling of toxic and hazardous materials, and measures to contain and minimize discharges to the storm sewer system	
	○ Proper management and disposal of used oil and other hazardous or toxic materials, including practices to minimize exposure of materials/wastes to rainfall and minimize contamination of stormwater runoff	
	○ Stormwater management practices, pollution prevention plans, and facility maintenance procedures	
Industrial Commercial Businesses	• Industrial Information packets	12
	○ Illicit discharges and proper management of non-stormwater discharges	
	○ Spill prevention, proper handling of toxic and hazardous materials, and measures to contain and minimize discharges to the storm sewer system	
	○ Proper management and disposal of used oil and other hazardous or toxic materials, including practices to minimize exposure of materials/wastes to rainfall and minimize contamination of stormwater runoff	
	○ Stormwater management practices, pollution prevention plans, and facility maintenance procedures	
Subtotal Reached:		2,383
Cost:		\$1,709

Table I.A.iii.

City of Tucson -Planning and Development Services		
Target Group:	Development Construction	
	Outreach Materials	Number
•	12 Monthly Outreach meetings, approximately 15 attendees	
Subtotal Reached:		15
Cost:		\$1,200

Table I.A.iv.

City of Tucson -Water		
Target Group:	General Public	
	Outreach Materials	Number
•	Rainwater Harvesting Manuals	2,500
•	Rainwater Harvesting Rebate (flyer in water bill)	0
Target Group:	General Public	
	Outreach Materials	Number
•	27 "Water-Wise Landscaping" Workshops	888
Subtotal Reached:		3,388
Cost:		\$10,593

Table I.A.v.

Pima Association of Governments		
Target Group:	Construction Industry	
	Outreach Materials	Number
•	Meetings with the Southern Arizona Homebuilders Association	2
•	PAG Stormwater website hits	2,401
○	Erosivity Calculator	
○	Example SWPPPs	
○	Inspection Checklists	
○	Local Contacts	
○	Links to City's Stormwater Ordinance	
Target Group:	General Public	
	Outreach Materials	
•	Webpages, social media, blogs, internet radio	290,904
•	Back of bus ads	1,575,000
•	Magazine ads	75,000
•	Displays at community events	53,700
•	Newspaper ads	450,000
•	Arizona Project WET teacher and student activities	22,830
•	Displays and presentations at professional events	452
•	Watershed pocket guides and fold-out maps	7,045
•	English rack cards	3,570
•	Spanish rack cards	1,845
•	Bookmarks	1,430
•	Children's activity sheets	600
•	Litter bags	300
•	Spanish clean water poster	150
•	Dog poop stickers	35
•	Sunshades	16
Subtotal Reached:		2,755,328
Cost:		\$17,182

Table I.A.vi.

University of Arizona, Cooperative Extension Service		
Target Group:	General Public	
	Outreach Materials	Number
•	Proper use of fertilizer, insecticides, herbicides, and other pesticides	0
•	Integrated Pesticide Management (IPM)	1,700
Subtotal Reached:		1,700
Costs:		Unknown

7. Table I.A.vii Summary of Public Education and Outreach

Table	Jurisdiction	Reached	Costs
I.A.i/ii	City of Tucson -Transportation Department	4,541	\$1,709
I.A.iii	City of Tucson -Planning and Development Services Department	15	\$1,200
I.A.iv	City of Tucson -Water Department	3,388	\$10,593
I.A.v	Pima Association of Governments	2,755,328	\$17,182
I.A.vi	University of Arizona -Cooperative Extension Service	1,700	Unknown
TOTALS:		2,764,972	\$30,684

II. Stormwater Public Involvement Program

A. ACTIVITIES, NUMBER OF PEOPLE

1. Stormwater Management Program

The City of Tucson Stormwater Management Program website contains a contact page allowing citizens to “Report a Concern,” including spills that threaten to enter the storm-drain system, dry weather flows, construction or industrial site runoff, and illegal dumping in stormdrains or washes. The City website received hits that are listed in Table II.A.i.

2. Household Hazardous Waste

During the reporting period public participation in the City’s Household Hazardous Waste Collection Program was encouraged through a variety of educational outreach materials advertising this service, including a product-specific brochure describing the collection site locations, hours of operations, and tips on how to reduce environmental impacts entitled, “Protect Our Environment from Household Hazardous Waste”.

The program distributed outreach materials to the general public through direct mailings, handouts at public events and facilities on topics including disposal of the following:

- auto fluids
- batteries
- solvents
- pool chemicals
- pesticides
- paints

In addition, the program provided brochures and online information to businesses through their Small Business Waste Assistance Program (SBWAP). The SBWAP provides an affordable and environmentally safe alternative to qualifying businesses – Conditionally Exempt Small Quantity Generators (CESQGs) operating within Pima County - for proper disposal of their hazardous waste at the Household Hazardous Waste facility (HHW). Registration is required with company certification of generator status.

Businesses and the general public participated in the HHW program by dropping off household hazardous waste at the designated collection facilities.

Program outreach materials, public participation, and operating costs for this reporting period are summarized in Table II.A.ii.

3. Tucson Clean & Beautiful

Through the Adopt a Park and Public Areas program, 292 public sites in the Tucson area have been officially adopted by community volunteer groups. Volunteer removal of litter and illegally dumped material from public areas helps to reduce impacts to stormwater quality. Volunteer efforts continue to have a positive impact on the community, with more than 24,000 service hours provided in the past year and a growing number of sites with community stewards volunteering regularly along with one-time projects.

Trees for Tucson provided nearly 9,000 affordable shade trees to the public within the past year, including area residents for their own home, and for community volunteer planting projects. These desert-adapted trees help trap pollutants to improve water quality, stabilize soil, and prevent soil erosion. Cumulatively, more than 100,000 trees have been distributed. Modeled results of these trees over time show that more than 700 acres of new tree canopy is now in place throughout the region, resulting in reduction of stormwater runoff of more than 60 million gallons annually.

Tucson Clean and Beautiful provided periodic email newsletters and maintained their website. These online resources were complemented by information provided by phone, in person and in brochure format, highlighting local environmental education events and community volunteer opportunities. These programs, as well as the central message of Tucson Clean and Beautiful, encourage the public to act responsibly in ways that improve and promote stormwater quality. Table II.A .iii, below provides an overview of the scope and audience of their program.

Both Tucson Clean & Beautiful and the City of Tucson are also collaborators in the Pima Association of Governments "Clean Water Starts With Me" campaign to reduce stormwater contamination on a regional basis.

Table II.A.i.

Stormwater Management Program		
Target Group:	General Public	
	Outreach Materials	Number
•	Stormwater Section website "Report a Concern" web hits	452
	Subtotal Reached:	452

Table II.A.ii.

Household Hazardous Waste (HHW)		
Target Group:	General Public	
	Outreach Materials	Number
•	Number of Brochures printed on properly disposing of auto fluids, batteries, paints, and solvents, pool chemicals, and pesticides	4,000
•	HHW webpage visits	38,039
•	New's releases on HHW collections	3
Target Group:	General Public	
	Outreach Materials	
•	Household Hazardous Waste Collection Program	
○	Participants in the program	10,414
•	ABOP drop-off sites	
○	Participants in the program (Counted in HHW Collection Program above)	5,078
Target Group:	Small Businesses	
	Outreach Materials	
•	Small Business Waste Assistance Program	
○	Participants in the program	129
	Subtotal Participants:	10,543
	Subtotal Program Cost:	\$648,149

Table II.A.iii.

Tucson Clean and Beautiful		
Target Group:	General Public	
	Outreach Materials	Number
• Newsletter		5,800
• Website		39,500
• Outreach presentations and event participants		12,450
Target Group:	General Public	
	Outreach Materials	Number
• Adopt a Park and Public Areas, including Streets and Washes (Participants in the program)		5,500
• Trees for Tucson Program		
○ Households Receiving Trees – Reduces soil erosion, improves stormwater quality		2,350
	Subtotal Participants:	65,600
	Subtotal Program Cost:	\$ 149,700

4. Table II.A.iv Summary of Public Involvement

Table	Jurisdiction	Reached	Costs
II.A.i	City of Tucson -Transportation Department-Stormwater	452	0
II.A.ii	City of Tucson -Household Hazardous Waste	10,543	\$648,149
II.A.iii	Tucson Clean and Beautiful	65,600	\$ 149,790
TOTALS:		76,595	\$797,939

III. Illicit Discharge Detection and Elimination (IDDE) Program

A. MUNICIPAL EMPLOYEE TRAINING

1. Specialized Stormwater Training

The TDOT team assigned to carry out the functions of the stormwater program participated in weekly training/discussion sessions. The focus varied on all activities related to the stormwater program. These activities included complaints, sanitary sewer overflows, illicit discharges, sampling activities, sample results and action needed, field screen outfall investigations, Multi-Agency Inspection Team (MAITs) inspections, industrial inspections, procedures, policies, and enforcement protocol. After the Stormwater Manager retired in March, the meetings were discontinued until a new Program Manager was assigned in April. The stormwater inspectors completed their annual Occupational Safety and Health Administration (OSHA) training that included direction on who to contact if they encounter a spill. The Stormwater Inspectors also received RCRA training, Hazmat Safety training and pesticide training.

Construction Inspection staff were cross trained to provide assistance to the current stormwater inspection team.

2. Non-Stormwater Employees

Non-stormwater employees received training from Central Safety Services on topics including: spill prevention and response, proper storage, handling and disposal of used oil and other toxics, reporting spills, reporting spills that threaten the stormdrain system, and

reporting suspicious non-storm flows. This training was provided at orientation in the “City of Tucson Employee Safety Handbook” and by watching our Stormwater DVD “Municipal Storm Water Pollution Prevention Storm Watch” and answering questions after viewing the DVD. City employees also attended training of a Power Point presentation called “Stormwater Awareness Training” through “City Learn,” an online program that allows staff to take training individually. Therefore, no dates are reported. The specialized 40 hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training was provided to fire personnel. The 8-hr HAZWOPER refresher training is taken annually by Tucson Water and Environmental Services staff. The numbers of employees trained are tabulated in Part 4.

New employee awareness videos, Inspection training videos, and public outreach videos by Excal Visual were purchased this year. The title of these are Illicit Discharge Detection and Elimination, Rain Check, and IDDE Public Outreach respectively. A schedule and training program should be in place for this next year.

B. SPILL PREVENTION AND RESPONSE

1. Municipal Facility Assessments

During the previous report year, Stormwater Management Program assessed City owned and operated facilities for the presence of materials that have the potential to impact stormwater quality, and prioritized these facilities based on the risk of these impacts. The City utilized a Multi-Agency Inspection Team (MAITs) to perform annual inspections of all City owned and operated facilities. The team consisted of representatives from City agencies with expertise in Industrial Hygiene, Occupational Safety and Health Administration (OSHA) Compliance, Risk Management, Fire Code, and Stormwater. Facility assessments have been conducted in conjunction with the MAITs inspections, and were focused on determining the potential for each facility to impact stormwater quality.

2. Identification of Higher Risk Facilities

The City continued to annually review, inspect, and prioritize the list of municipal facilities. Control measures are in use to minimize potential stormwater exposure. During this reporting year 11 municipal facilities were identified as higher risk facilities: Thomas O. Price Service Center, Fred Enke Golf Course, El Rio Golf Course, Silverbell Golf Course, and Randolph Golf Course, Fire Department Maintenance (HAZMAT) and Household Hazardous Waste. The list includes municipal facilities with an MSGP; Los Reales Landfill, (AZMSG-61695), Sun Tran Bus Terminal AZMSG-61745, Sun Tran Bus Terminal Northwest AZMSG-61747, and Sun Van AZMSG-61746.

3. Spill Tracking

Several years ago, the City developed a Spill Response Program, S-020C, used to provide direction on how to handle spills. Part of the program includes tracking of the number of spills that occurred. This year, 14 spills were reported by Environmental Services, as required by the program. Additionally, the Spill Response Program is going through an extensive revision process that should be finalized by the end of 2015.

C. DRY WEATHER SCREENING OF MAJOR OUTFALLS

1. Outfall Inventory

In the early 1990s, the City of Tucson followed the procedures outlined in 40 CFR 122.26 to identify 500 outfalls that have been subsequently utilized to detect non-storm flows. These outfalls have been mapped on the City's Geographic Information System (GIS) Stormwater Map. A map showing the identified outfalls is included in PART 13 (Attachments) of this report.

2. Outfalls Inspected

In this report period, the Stormwater Management Program conducted dry weather outfall screening inspections of 97 outfalls. There were no dry weather flows found at any of these outfall locations.

3. Priority Outfall Inspected

During this year, 14 priority outfalls were inspected. The priority outfalls are inspected annually. The locations of the priority outfalls are upstream from Lakeside Lake in the Atterbury Wash Watershed. There were no dry weather flows found at any of these outfall locations.

4. Results of Dry Weather Screening

Of the 97 outfall inspections conducted, none of the outfalls had flow. A few were referred to the Streets Department for minor repair of concrete, soil erosion, or removal of excess debris. Information collected during dry weather field screening is recorded and tracked through the Field Screen Outfall Database.

5. Eliminate Illicit Discharges (Cross Connections and Other Sources)

The City annually inspects areas of the stormdrain system for the presence of illicit discharges. The locations are based on; industrial facility inspections, complaints received from the public, reports from City Departments, and reports from other agencies. There was one illicit cross connection found and eliminated during this reporting period.

6. Reports of Dry Weather Flows

In this report period, the City received 86 reports of dry weather flow and responded to all of them. The reports were received from citizens, other City Departments, Ward offices, and other agencies. Reports of dry weather flow are considered to be a priority for response and inspection. Investigations conducted revealed that the source water originated from a variety of sources including: pool draining, pool back-flushing, grey water, sanitary sewer overflows, potable water releases, site runoff, and spills.

There were 32 discharges reported for sanitary sewer overflows. Of the discharges reported four entered a storm drain, and one occurred within the Naylor Wash. Each sanitary release was properly cleaned up, sanitized, and flushed and vactored, as required. The flows were from overflowing cleanouts, manholes, grease traps, and/or broken pipes.

There were 8 reports that were from pool draining or pool filter backwashing. The inspections resulted in verbal warnings and outreach flyers were provided to pool owners

for swimming pool discharges onto an unpaved right-of-way. In areas where there were discharges into an unpaved area, the discharger was directed to stop the flow, remove the discharge pipe or hose from the area, and ensure that backwash water remains on-site or is directed into a sanitary sewer cleanout. Pool discharge flyers were left at properties when no one answered the door during the inspectors' visits.

There were 15 reports of spills. A majority of those were due to Environmental Service collection vehicles having hydraulic leaks in the field. None of them entered a storm drain or wash in the City's MS4.

The remaining reports of discharges were from: construction sites that did not need a Stormwater Pollution Prevention Plan (SWPPP), allowable De Minimis Permitted discharges, water line repairs or flushing that resulted in verbal warnings or requests for better communication, and discharges that originated from grey water which were referred to Pima County for enforcement. Other reports of discharges were from commercial operations, referrals, excess irrigation, and public complaints. All of the reports of spills or discharges were inspected by City staff and were properly clean up.

IV. Municipal Facilities Pollution Prevention/Good Housekeeping Program

A. MUNICIPAL EMPLOYEE TRAINING

1. New and Current Employees

All new City employees attend orientation where they each receive a "Safety First Manual." This employee safety manual includes details on what to do with spills. This report year there were 377 new employees that attended orientation. Additionally, City employees attend mandatory OSHA training during their first year and ongoing employees receive OSHA training every other year through the City's online program entitled "City Learn." The numbers of employees trained are tabulated in Part 4. Because classes are taken individually, no dates can be reported for the majority of employees. For those employees who do not have access to a computer, the City Learn training is conducted in a class setting. OSHA training for City of Tucson employees included the following key subject areas:

- Spill Training: Topics covered include prevention, response, and practices to prevent or minimize spills or discharges to the City's stormdrain system.
- Proper Handling, storage, transport and disposal of used oil and other toxics and hazardous materials and wastes to prevent spills, exposure to rainfall, and contamination of stormwater runoff.

More extensive training on these subjects is provided for first responders and staff who routinely work with hazardous or toxic products. New employees receive the preliminary 40 hours HAZWOPER training, and existing employees receive the HAZWOPER refresher classes.

2. Specialized Stormwater Training

Department of Transportation stormwater staff received extensive training during their first year of employment and refresher training every other year. New employees who work in the stormwater area each receive a copy of the Stormwater Ordinance (SWORD), the Stormwater Management Plan (SWMP), the Watercourse Maintenance Guidelines, and any applicable ordinances and regulations. . During the reporting year, the Construction Inspection staff (20) was cross trained to assist with construction SWPPP Inspections and with Illicit Discharge Detection and Elimination Inspection. Others were trained in Municipal Facility Control and Industrial/commercial Control. All were trained in Post Development Controls.

The Department of Transportation employees who were originally assigned to work in the stormwater area (three) received training at the 2015 Annual RCRA Seminar hosted by SAEMS on May 14, 2015. One employee received Hazardous Materials Safety training provided by LEPC on January 28, 2015 . Additionally, two employees participated in the following training;

OSHA Annual 8 hour refresher

State of Arizona General Pesticide 6 hour CEU (April 23, 2015)

HAZWOPER annual refresher

Stormwater Awareness Training City Learn

The Department of Transportation employees who work in the stormwater area (three) conducted and attended weekly training that focused on the following:

- Recent incidents and how handled.
- Issues at construction sites during excessive rains.
- Discussions on industrial inspection results and activities.
- Wet weather sample results and dry weather screening findings.
- Success/failures/participation with outreach activities.

On-going training for Planning and Development Services Department Stormwater staff included frequent review and discussion of City Ordinances, development standards, and stormwater regulations. New staff are trained by existing staff in a mentoring process. The department has hired a trainer to develop a training program for the program as well as its inspection staff.

B. MUNICIPAL FACILITY ASSESSMENTS

1. Municipal Facility Inventory

To date, the City has identified 199 City owned and operated facilities that have been tabulated and are maintained on an inventory list. The list includes the latitude/longitude, facility contact, the operational status (operating or closed), the Standard Industrial Classification (SIC) code(s) that best reflects the services provided by each facility and a brief description of operational practices that could potentially impact stormwater quality. The City will investigate adding information from the inventory to the GIS Stormwater Map.

2. Higher Risk Facilities

(a) MAITs Inspections

This fiscal year, the stormwater inspector assigned to the MAITs inspection team assessed the potential of City owned and operated facilities to impact stormwater quality. The City prioritized municipally owned facilities based on the following criteria:

- Proximity to Lakeside Lake, an impaired water
- Need for an MSGP
- Potential for impacting stormwater quality based on:
 - Quantity and location of materials used and/or stored at the facility;
 - Potential for exposure to stormwater; and
 - Potential to discharge a substantial pollutant load to the MS4 or to a water of the U.S.

Seven City facilities that don't need an MSGP were considered higher risk during this reporting period. These were: Thomas O. Price Service Center, Fred Enke, El Rio, Silverbell, and Randolph Golf Courses, Fire Department Maintenance (HAZMAT) and Household Hazardous Waste. Additionally,

facilities with an MSGP are considered higher risk. They are: Los Reales Landfill, (AZMSG-61695), Sun Tran Bus Terminal AZMSG-61745, Sun Tran Bus Terminal Northwest AZMSG-61747, and Sun Van AZMSG-61746.

(b) Proper Management of Used Oils and Toxics

The Tucson Fire Department manages the City of Tucson Hazardous Waste Disposal Program, a citywide program to ensure proper handling and disposal of all toxic wastes generated by City operations. The General Services Department, located at Thomas O. Price Service Center, has an automotive fluids handling procedure to contain fluids in designated storage areas.

(c) Controls for Pesticides, Herbicides, and Fertilizers

Responsibility for proper storage and application of pesticides, herbicides, and fertilizers at City owned facilities is shared by two City Departments, City of Tucson Parks and Recreation Department, and the City of Tucson Department of Transportation, Streets and Traffic Maintenance Division. Proper storage practices in terms of stormwater BMPs were verified during the Multi-Agency Inspection Team (MAITs) inspections. Separate costs for implementation of these controls are limited or were not available at the time of this report.

C. INSPECTIONS

1. Prioritizing Areas of MS4 for Inspection

The City of Tucson, Department of Transportation, Streets and Traffic Maintenance Division shared responsibility for inspection and maintenance of the City's MS4 drainage System with the City Parks and Recreation Department. The drainage channels/washes located within City owned parks are considered priority and are normally inspected once a year. Based on system history, citizen complaints, and known maintenance concerns, the City annually inspects key areas of the stormdrain system located outside of City owned parks for the presence of illicit discharges, excess sediment, litter, debris or other pollutants that may obstruct flow or be transported in stormwater. In this report period, the City considered 394 miles of the MS4 drainage system outside of City owned parks as priority and 340 miles of these were inspected.

2. Municipal Facility Assessments

The City's Multi-Agency Inspection Team (MAITs) conducted annual inspections of all (199) City owned and operated facilities. As required, follow-up inspections occurred to verify that corrections had been made. During the last fiscal year, the Construction Inspector assigned to MAITs continued to perform assessments of City facilities to determine if five or more gallons of potential stormwater pollutants were stored in areas exposed to stormwater. Based on this assessment, on the types of activities performed, material stored, and proximity to receiving waters, the City determined which of these facilities are considered high risk.

The City of Tucson Environmental Services owns and maintains 15 closed landfills and one active landfill; Los Reales. Los Reales Landfill operates under the MSGP 2010 (AZMSG-61695). The Los Reales Landfill Stormwater Pollution Prevention Plan (SWPPP)

was written in accordance with the MSGP 2010. On June 24, 2014, the City conducted an inspection of Los Reales Landfill. This inspection is an additional measure to ensure that pollutants from landfills and municipal waste facilities are controlled. No violations or concerns were noted during the inspection of Los Reales Landfill. The Los Reales Landfill is maintained in good operating condition.

The City of Tucson Environmental Services Department conducted quarterly inspections of the closed landfills. Additionally, the Department of Transportation conducted inspections of the 15 closed landfills on April 24, May 15, and May 18, 2015. The closed landfills are maintained in good condition. No concerns or violations were noted.

The City's fleet maintenance facility, Thomas O. Price Service Center, is not regulated under an MSGP. However, it is covered under the City's MS4 permit. The Thomas O. Price Service Center maintained a SWPPP and had a Stormwater Pollution Prevention Team that conducted quarterly stormwater inspections of the facility. The Department of Transportation conducted an inspection of the Thomas O. Price Service Center on September 24, 2014 and April 28, 2015; No violations were found.

3. MSGP Facilities

To date, the only city owned and operated facility that qualifies for coverage under the Multi-Sector General Permit is Los Reales Landfill. Los Reales is covered under authorization number AZMSG-61695; however, as an additional landfill control measure, Los Reales is inspected annually by the Stormwater Management Program.

There are three City of Tucson owned transit facilities that are privately managed and staffed. They are two Sun Tran Bus Maintenance Facilities and the Sun Van Facility that are operated under separate MSGP 2010 permits. These facilities were inspected on November 14, 2014. Minor housekeeping issues were identified during inspections and were immediately addressed. A recommendation was made to increase employee awareness on cleaning vehicle spotting promptly. The MSGP permit numbers for these facilities are listed below.

- Sun Tran Bus Terminal AZMSG-61745
- Sun Tran Bus Terminal Northwest AZMSG-61747
- Sun Van AZMSG-61746

4. Summary of Follow-Ups

Concerns noted during FY 2014-15 MAITs inspections of municipally owned and operated facilities were at two City facilities. The concerns were for the following deficiencies:

- Tucson Community Center Arena. Outside storage area. 55-gallon drum not stored within secondary containment area. 55-gallon drum was relocated to the proper storage area within secondary containment wall and roofed overhang. 5-gallon containers without lids stored outdoors. Staff disposed the 5-gallon containers to the trash bin.

- Tucson Water Hayden Udall Treatment Facility. Two 55-gallon drums stored without secondary containment. The 55-gallon drums are stored within close proximity to a storm drain. Tucson Water acquired a secondary containment pallet for the two 55-gallon drums.

During the City facility inspections, minor adjustments to good housekeeping practices were recommended and usually addressed during the inspection. All inspections included a representative of the facility to observe any deficiency. Reports were sent to the facility managers and the responsible party. The report described the deficiencies and included instructions to notify the MAITs team, within 30 days of the corrective action, or to provide an abatement schedule. Follow-up inspections were conducted to verify that appropriate actions were taken to resolve concerns.

D. INFRASTRUCTURE MAINTENANCE

1. Stormdrain System

- Miles visually inspected:
City Street and Traffic Maintenance Inspectors inspected 340 miles of drainage channels/washes. Stormwater Inspectors inspected an additional 20 miles of stormdrain /washes. In total, approximately 360 linear miles of the City's MS4 were inspected.
- Miles Cleaned or Debris Removed:
In this report period, approximately 131 miles of drainage channels outside City parks were cleaned . Drainage channels within City parks has been monitored by regular site inspection reports and treating parks as high risk facilities.
- Cleaning of Closed Conduit:
Contracted vector services are utilized whenever there is need to clean City-owned closed conduit facilities. During this reporting period, approximately 175 linear miles of closed conduit were cleaned within City of Tucson owned Parks.
- Retention/Detention Basins Cleaned:
Accumulated sediments and debris in retention/detention basins are removed seasonally, or as necessary, contingent on flow. During this reporting period, Retention/Detention basins located in City owned Parks were not cleaned.
- Number of Catch Basins Identified:
The City identified 1,000 catch basins.
- Number of Catch Basins Cleaned:
Four catch basins outside City parks were cleaned.

2. Roadway System

- Street and Parking Lot Sweeping Program:

The Streets and Traffic Maintenance Division's current schedule for street sweeping for major arterial and collector streets is twice monthly, and sweeping streets in the central business district is three times each week. These priorities are reassessed annually. Street and parking lot sweeping in public parks is conducted through the Parks & Recreation Department.

- **Broom Miles:**
The Streets and Traffic Maintenance Division swept 27,052 broom miles of roadways.
- **Total Waste Collected:**
The total amount of waste collected from Streets and Traffic Maintenance Division sweeping was 8,340 tons.

E. MAPPING STATUS

The City's GIS mapping system is formatted as an Environmental Systems Research Institute (ESRI) Geodatabase feature class North America Datum of 1983 (NAD83) High Accuracy Reference Network (HARN) in State Plane Arizona Central Fips 0202 International Feet. The GIS based Stormwater Map, <http://maps.tucsonaz.gov/stormwater> currently contains the following information:

- **Linear Drainage Structures:** Line layer showing the location of stormwater system pipes. The direction of flow can be determined based on the topographic layer.
- **Stormdrain Grates and Catch Basins:** Point layer showing the locations of stormdrain grates and catch basins.
- **Outfalls:** Point layer showing the location of all major outfalls (field screen locations); polygon layer showing the drainage area associated with each of the five sampling sites where stormwater is monitored.
- **Detention/Retention Basins:** Point or polygon layer showing the locations of all identified City-owned retention and detention basins.
- **Jurisdictional Boundary:** Line or polygon layer showing the jurisdictional boundaries of the MS4, including any new land annexations during the permit term.

During the first four years of this permit, the City plans to incorporate mapping of additional features identified in the new MS4 permit. This will be an ongoing effort, but essentially has been updated as of September 30, 2015. A GIS Stormwater Map can be found in the Appendix.

V. Industrial Stormwater Program

A. MUNICIPAL EMPLOYEE TRAINING

The Stormwater Management Program did not hire anyone specifically in this reporting year. Current employees meet weekly with a Lead Inspector and Program Manager to discuss stormwater activities and to review/developed procedures.

B. STATUS OF INVENTORY

1. Industrial Facility Database

The Department of Transportation maintains a list of Industrial and Commercial facilities that have the potential to discharge pollutants to the City's storm sewer system. Currently the list consists of 220 facilities that are targeted by the Multi-Sector General Permit (MSGP). The Industrial Facility list currently includes the following facilities:

- Industrial facilities identified in 40 CFR 122.26(d)(2)(iv)(C);
- Industrial facilities subject to MSGP requirements, including those facilities that have submitted for a no exposure exclusion; and
- Other industrial and commercial sources (or categories of sources) that the City has inspected over the last permit term.

2. Higher Risk Facilities

During the previously reporting period, the Stormwater Management Program identified 33 higher risk facilities that are more likely to be sources of stormwater pollution. The priority list was re-evaluated and risk assessment was based on the type of facility, the products or services provided by the facility, proximity to receiving waters, receiving water quality, and other factors that indicate the potential to impact water quality. This high risk facility list has not changed.

3. AZPDES Non-filers

The City continued with the program to determine whether or not a facility has obtained coverage under the Arizona Multi-Sector General Permit. When the City identifies a facility that has not obtained the required coverage, the City will report that facility's location and information to the ADEQ Unit Manager, Field Services Unit, Water Quality Compliance Section semi-annually, by June 30 or December 31. During this reporting period, there were no facilities to report as non-filers.

C. INSPECTIONS

1. Inspection Findings

During the facility inspections, recommendations were made to improve control measures to assure permit compliance. There were no enforcement actions that involved City court. All corrective actions were minor and corrected at the time of inspection or, if needed, were corrected by the time of a scheduled re-inspection. Notable corrections made at inspected facilities included the following:

- Obtain required MSGP.
- Create a facility SWPPP and/or update a facility SWPPP.
- Update SPCC plans every 5 years.
- Train employees on stormwater pollution prevention and spill response.
- Install control measures to prevent discharges into the MS4.
- Place secure lids on 55-gallon drums and relocated to areas with overhead protection and secondary containment.
- Reduce inventory of 55-gallon drums used for waste.
- Improve housekeeping at fueling areas by cleaning spills with absorbents and having spill kits stationed at fueling areas.
- Improve control measures / BMP's at material storage areas to prevent discharges into MS4.
- Improve general housekeeping by cleaning spills promptly, training employees, and having spill kits available at work areas.

2. Inspect 20% of all Facilities

The City continued to include photographs and summaries in the inspection reports. This detail ensures the owner and operator clearly understand what recommendations need to be applied. Additionally, the focus was on facilities of higher risk that take much longer to complete than those of low risk. This year, the target of inspecting 20% of the facilities was achieved. The City inspected 44 facilities targeted under the MSGP. This total is 20% of all of the MSGP targeted facilities in the Industrial Facility Database. Of the 33 high risk facilities, 14 were inspected. The City will continue to review and revise the facility list, and will ensure that a minimum of 20% of facilities on the list receive inspections.

3. Enhancing the Industrial Facility Program

During the permit term, the Department of Transportation enhanced the industrial/commercial program by continuing educating facility operators regarding the MSGP 2010 and the sector specific requirements for their respective industry. During facility inspections, additional time was dedicated to discuss and explain the MSGP 2010 and sector specific requirements. This was performed to assist facility operators to be in compliance with stormwater regulations.

VI. Construction Site Controls

A. MUNICIPAL EMPLOYEE TRAINING

1. New and Existing Employee Training

Although the Stormwater Management Program did not hire anyone in this report period, additional inspection staff has been trained to provide inspection support. New Stormwater Management staff receive extensive training during their first year. Stormwater training incorporates both SWPPP review and inspections. An emphasis on cross training allows a small staff to fill in as needed to meet fluctuations in workload. They receive extensive written materials, such as, a copy of the Stormwater Ordinance (SWORD), the Stormwater Management Plan, the Watercourse Maintenance Guidelines, a copy of the AZPDES Construction General Permit, and any applicable ordinances and regulations and outreach materials for stormwater management for construction facilities.

B. PLANNING AND LAND DEVELOPMENT

The City recognizes the need to understand Low Impact Development (LID) and Green Infrastructure Practices (GI). The City has recently completed a “Green Streets Active Practice Guidelines” for City streets construction projects.

C. PLAN REVIEW AND APPROVAL

1. Plan Review

Following SWPPP review and plan approval, the Planning and Development Services Department (PDSD) issues grading and building permits.

2. Plan Approval

Verification that the SWPPP and Notice of Intent to Discharge (NOI) are complete is a requirement for the issuance of a grading permit. SWPPPs were submitted and reviewed and ground disturbing permits were issued that met the AZPDES Construction General Permit eligibility requirements.

3. Pre-Construction Meetings

Planning and Development Services Department (PDSD) held pre-construction meetings for private construction projects. The meetings provided an opportunity to review the City’s requirements that included providing a copy of ADEQ’s authorization document at the preconstruction meeting. Other requirements are aimed at ensuring the contractor understood that the stormwater controls (BMPs) to be utilized for all sites regardless of the size, if pollutants potentially leave the site.

4. Transportation Projects

The Department of Transportation administers the construction of roads and stormdrains within the publicly owned right-of-ways. The Stormwater Management Program reviews plans and ensures the SWPPPs for these projects meet all the requirements of the Arizona

Construction General Permit. The City does not issue a Notice to Proceed until a copy of ADEQ's authorization document is received.

D. STATUS OF INVENTORY

1. Permits Plus Database

The City continued to utilize the Permits Plus Database to track private development activities and inspections. Information in the database included: requirements for a Construction General Permit, plan and SWPPP review comments, number of submittals, site location, construction inspections, enforcements and other information. This database is continually updated as plans are submitted and reviewed, permits are issued, and construction sites are inspected.

2. Smart NOI Database

A search is performed annually through ADEQ's NOI Construction Stormwater General Permit Database for permits the City has filed. Expired permits or finished projects are noted and the City's signatory is notified to file a Notice of Termination (NOT) with ADEQ.

E. INSPECTIONS

Many construction projects are small and do not come under the AZPDES requiring a SWPPP. Capital projects attempted by the City that do require SWPPP's require good housekeeping measures that utilize BMPs for the site. These are inspected for compliance.

ROW permits for excavation, private improvements, or other earth disturbing work that do not require a SWPPP are inspected for good housekeeping measures too.

1. Inspection Findings

During this reporting period, PDSO inspected 40 construction sites. The findings were typical of construction sites and inspectors communicated what was needed in order to comply with AZPDES construction general permit.

2. Enforcement Actions

During this reporting period, PDSO issued 393 enforcement requests for corrective actions due to site deficiencies. These included the location, installation, and maintenance of controls, and the requirement for on-going inspections. 295 enforcement actions were resolved at the time of the follow-up inspection, and the remaining are in progress.

3. Transportation Projects

During this reporting period 56 inspections of 7 Capital Improvement Projects (CIP) and Public Improvement Agreement (PIA) projects involving road construction were performed. SWPPP deficiency(s) were reported to the on-site superintendent, field engineer, or designated representative. Verbal warnings were given to correct the discovered deficiency(s) that ranged from track-out, sediment accumulation along the roadway, stormdrain inlet protection maintenance, improperly installed BMPs, failed BMP's, stockpile management, concrete washout use, and record keeping. Follow-up inspections determined that all concerns were quickly addressed and resolved satisfactorily.

VII. Post-Construction Site Controls

A. MUNICIPAL EMPLOYEE TRAINING

Municipal employee training for construction and post-construction is discussed under Section VI Construction Site Controls.

B. POST-CONSTRUCTION CONTROLS

In this report period, the City did not implement any new post-construction controls for municipal projects. The City will develop an inspection, maintenance, and tracking program for Post-Construction Controls.

1. Inspection of Privately owned Retention/Detention Basins

The Planning and Development Services Department (PDSD) has an on-going program for inspection of privately owned retention/detention basins to ensure that the basins continue to operate as designed. Every year PSDS inspects privately owned basins and performs follow up inspections if deficiencies are found.

2. Inspection of 75% of City Permitted Sites

In this report period, the City inspected all of the permitted sites. Planning and Development Services Department inspectors conducted post construction inspections of privately developed sites to ensure vegetative landscape cover was established to stabilize the site. The Stormwater Management Program conducted post-construction inspections for Capital Improvement Projects and Private Improvement Agreement projects that were completed during this report period. Permits and Codes Section performed post-construction inspections for AZPDES projects. No concerns or deficiencies were noted.

C. COMPLIANCE ACTIVITIES/ENFORCEMENT

1. Privately Owned Retention/Detention Basins Enforcement

No major enforcement actions (citations) were issued in this report period. However, verbal and/or written requests for basin maintenance are still given.

2. Summary of Follow-up Actions

Upon follow-up, all requested maintenance had been performed to keep basins functional.

PART 4: NUMERIC SUMMARY OF STORMWATER PROGRAM ACTIVITIES

I. Illicit Discharge Detection & Elimination Program

A. MUNICIPAL EMPLOYEE TRAINING

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of training sessions (on non-stormwater discharges and the IDDE program)	• 18	• 85	• 13	• 389	•
Number of employees attending training	• 128	• 273	• 448	• 3,900	•

B. SPILL PREVENTION

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of municipal facilities identified with hazardous materials	• 9	• 231	• 243	• 216	•
Number of spills at municipal facilities with hazardous materials that occurred in outside areas	• 9	• 12	• 15	• 3	•
Number of facility assessments completed	• 213	• 212	• 302	• 390	•
Date of last review of site-specific materials handling and spill response procedures	• 6/12	• 4/13	• 6/14	• 7/15	•

C. OUTFALL INSPECTION

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Total number of major outfalls identified to date	• 521	• 521	• 536	• 500	•
Total number inspected	• 113	• 127	• 110	• 111	•
Number of 'priority outfalls' identified to date	• 10	• 13	• 17	• 14	•
Number of 'priority outfalls' inspected	• 10	• 13	• 14	• 14	•
Number of potential dry weather flows detected	• 0	• 0	• 0	• 0	•
Number of potential dry weather flows investigated	• 0	• 0	• 0	• 0	•
Number of major outfalls sampled during dry weather flow	• 0	• 0	• 0	• 0	•
Number of illicit discharges identified	• 0	• 0	• 0	• 0	•
Number of illicit discharges eliminated	• 0	• 0	• 0	• 0	•

D. MS4 INSPECTIONS

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Amount of Stormwater drainage system inspected (length)	• 29	• 24	• 20	• 22	•
Number of stormdrain cross connection investigations	• 3	• 1	• 1	• 1	•
Number of illicit connections detected	• 1	• 1	• 1	• 1	•
Number of illicit connections eliminated	• 1	• 1	• 0	• 1	•
Number of corrective or enforcement actions initiated within 60 days of identification	• 1	• 7	• 1	• 0	•
Percent of cases resolved or transferred to City Court System within 1 calendar year of original enforcement action	• 100%	• 100%	• 100%	• 100%	•
Illicit discharge from irrigation, misting, overflow and ponding	• 486	• 501	• 543	• 818	•
○ Verbal warnings for above	• 275	• 409	• 457	• 425	•
○ Written warnings for above	• 68	• 30	• 19	• 3	•
○ Turned over to court for above	• 4	• 7	• 2	• 0	•

E. INSPECTION DUE TO REPORTS OF DRY WEATHER FLOW

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of illicit discharge reports received	• 120	• 123	• 75	• 86	•
Percent of illicit discharge reports responded to	• 100%	• 100%	• 100%	• 100%	•
Percent of responses initiated within 3 business days	• 100%	• 100%	• 100%	• 100%	•

II. Municipal Facility Stormwater Program

A. MUNICIPAL EMPLOYEE TRAINING

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of training events (*Various)	• >66*	• >79*	• >79*	• 6	•
Number of staff trained	• 3,800	• 4,196	• 4,437	• 3,459	•
Number of Stormwater Staff Training Sessions/number trained	• 5/27	• 7/4	• 61/20	• 5/113	•

B. MUNICIPAL FACILITY INVENTORY

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Total number of facilities on inventory	• 203	• 203	• 203	• 199	•
Date identification of “higher risk” facilities complete and date of prioritization of municipal facilities completed	• Nxt yr	• 10/12	• 10/12	• 10/12	•
Number of municipally-owned high risk facilities identified	• Nxt yr	• 7	• 7	• 7	•

C. INSPECTIONS

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Miles of MS4 drainage system prioritized for inspection	• 426	• 441	• 442	• 344	•
Miles of priority drainage system visually inspected	• 250	• 341	• 340	• 326	•
Number of “higher risk” municipal facilities inspected	• 4	• 10	• 9	• 7	•
Number of “higher risk” municipal facilities found needing improved stormwater controls	• 0	• 1	• 0	• 0	•

D. INFRASTRUCTURE MAINTENANCE

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Linear miles of drainage channel cleaned	• 161	• 99	• 51	• 131	•
Linear miles of closed conduit cleaned	• 0.05	• 0.3	• 0.05	• 175	•
Street sweeping (broom miles)	• 24,709	• 31,056	• 30,842	• 27,052	•
Record amount of waste collected from street and lot sweeping (tons)	• 7,027	• 8,856	• 8,008	• 8,340	•
Number of retention/detention basins cleaned	• 10	• 15	• 1	• 0	•
Total number of catch basins identified to date	• 1,000	• 1,000	• 1,000	• 1,000	•
Number of catch basins cleaned	• 43	• 26	• 27	• 4	•

III. Industrial Stormwater Program

A. MUNICIPAL EMPLOYEE TRAINING

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of training events for MS4 staff	• 5	• 2	• 1	• 2	•
Number of staff trained	• 3	• 4	• 2	• 2	•

B. INVENTORY

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of Industrial facilities inspected	• 19	• 44	• 54	• 44	•
Total number of facilities on the priority list	• 33	• 33	• 33	• 33	•

C. INSPECTIONS AND ENFORCEMENT ACTIONS

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of corrective or enforcement actions initiated on industrial facilities	• 7	• 8	• 3	• 4	•
Percent of cases resolved within one (1) calendar year of original enforcement action	• 100%	• 100%	• 100%	• 100%	•
Number of cases referred to the City Court System	• 0	• 0	• 0	• 0	•

IV. Stormwater Construction Program Activities

A. MUNICIPAL EMPLOYEE TRAINING

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of training events for SWPPP plan review staff	• 1	• 2	• 1	• 0	•
Number of staff trained	• 3	• 5	• 3	• 0	•

B. PLAN REVIEW

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of grading plans/SWPPPs submitted for review	• 47+	• 121	• 121	• 91	•
Number of ground disturbing permits issued that meet the AZPDES Construction General Permit eligibility	• 19+	• 54	• 62	• 44	•
Number of construction/grading plans reviewed for those that fall under AZPDES	• 24	• 37	• 52	• 60	•
Number of AZPDES permitted construction sites	• 24	• 51	• 67	• 52	•

C. INSPECTIONS AND ENFORCEMENT ACTIONS

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of AZPDES construction sites inspected	• 24	• 47	• 55	• 47	•
Number of corrective or enforcement actions initiated on construction facilities	• 415	• 566	• 414	• 333	•
Number of corrective actions resolved	• 262	• 361	• 257	• 325	•
Number of corrective actions turned over to the City Court System	• 0	• 0	• 0	• 0	•

V. Post Construction Program Activities

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY	2011-12	2012-13	2013-14	2014-15	2015-16
Number of post-construction inspections completed	• 1,921	• 2,318	• 2,127	• 2,783	•
Number of corrective or enforcement actions initiated for post-construction activities	• 15	• 30	• 34	• 20	•

PART 5 EVALUATION OF THE STORMWATER MANAGEMENT PROGRAM

The City's Stormwater Management Program has been effective during this report year. The City's Stormwater Management Program received feedback and found responses regarding education and outreach has shown that people have a better understanding of the need for keeping pollutants from contacting stormwater. During industrial and construction inspections, staff noted that the operator's base knowledge is improving and they are amiable to learning and complying with the stormwater regulations. Contact, through outreach events, has demonstrated that the general public is interested in keeping stormwater clean and willing to do their part to help. A number of volunteer groups work to clean up washes and public places as an example of the dedication the public has for keeping the environment pollution free.

PART 6 STORMWATER MANAGEMENT PROGRAM MODIFICATIONS

The Stormwater Management Program (SWMP) has been in use for about three years. During this last year, only minor modifications have occurred that better describe the stormwater program. The updated SWMP was posted on the City's Internet site in April of last year.

Recently, there have been organizational changes that will need to be reflected in the Stormwater Management Program. The Stormwater Management Program had been somewhat isolated in its approach and did not have the resources nor the connections needed to continue to operate as a section. Instead, the approach would be as all other programs and projects and that approach is to use the team approach. Personnel will be cross trained in several areas to address our succession planning vision to provide personnel to complete assigned work should a key player decide to leave or retire. Our personnel will be assigned specific direction to perform the requested duties as needed.

A Program Manager has been assigned to oversee the MS4 Program. The City of Tucson Department of Transportation will be the lead department for the City of Tucson. Regular meetings with all other departments will occur each quarter to discuss issues.

The Program Manager not only has the current two Environmental Inspectors, but also a Lead Inspector assigned for this program. He also has at his disposal additional inspection personnel to inspect, monitor, and document the construction side of things. The two Environmental Inspectors have been reclassified as Construction Inspectors to provide flexibility to the organization to allow more personnel to be available to do those job duties previously assigned specifically to the Environmental Inspections. The cross training has already begun. All current Construction Inspectors have been trained to perform the NSPDES SWPP construction inspection. Two others are currently being trained to perform the Industrial Inspection. This will free up the two Environmental Inspectors to do more Industrial Inspections. One of our Lead Inspector is already a trained Environmental Inspector and will directly supervise these two inspectors to better meet the criteria specified in the SWMP. Four other inspectors will be assigned responsibilities to assist with illicit discharge detection.

The intent of the organizational changes is to have access to more inspectors to help with the stormwater program, with the intent of utilizing staff more efficiently.

PART 7 MONITORING LOCATIONS

Stormwater is monitored at five locations within the City of Tucson. They are:

Site	Land Use	Physical Location	Location	Watershed Area (acres)	Receiving Water
1	Single Family Residential	Grant Road & Wilson Avenue	32° 15' 02.83" N 110° 56' 15.23" W	400	SC
2	Multi-family Residential	Greenlee Road	32° 16' 14.9" N 110° 53' 56.88" W	49	R, SC
3	Commercial	El Con Mall / Randolph Way	32° 13' 16.16" N 110° 55' 04.77" W	38	SC
4	Industrial	17 th Street	32° 12' 48.33" N 110° 57' 12.33" W	91	SC
5	Mixed Use	First Avenue at Limberlost Road	32° 16' 58.28" N 110° 57' 40.35" W	380	R, SC

SC = Santa Cruz River, R = Rillito River, P = Pantano Wash

The flow from Sites 2 and 5 goes to the Rillito River and then to the Santa Cruz River. The other sites flow directly into the Santa Cruz River. At the discharge points, the Santa Cruz and Rillito are both normally dry, ephemeral washes with no aquatic habitat.

All five of the City's monitoring stations are equipped with automated sampling equipment. The automated equipment is programmed to collect flow-weighted samples at fixed time intervals. However, due to constant equipment malfunctions, sampling is conducted manually. Samples are composited at the laboratory based on storm hydrographs to achieve a flow-weighted composite for analysis.

ADEQ advised the City on May 9, 2013, to utilize automatic samplers. The City responded and obtained quotes and training on a variety of automatic samplers and how they worked. They learned that it is nearly impossible to collect flow proportional samples with automatic samplers and be in compliance with this permit at the same time. As convenient as it would be to have automatic samplers, the City decided against implementing automatic samplers in an effort to stay in compliance with the permit.

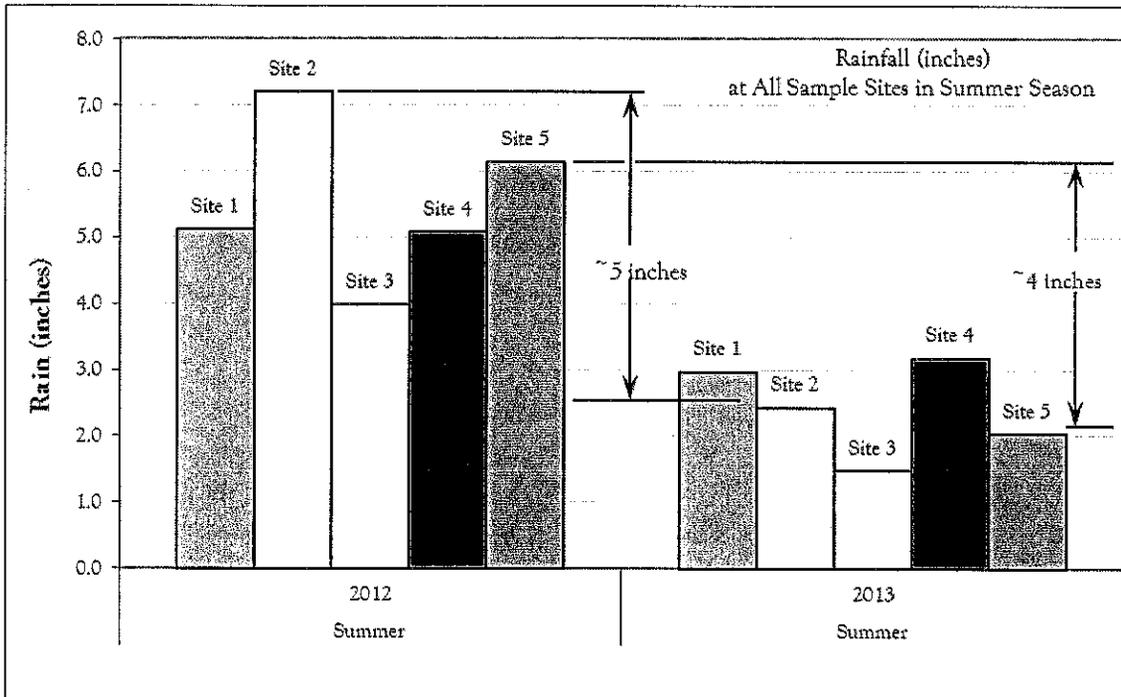
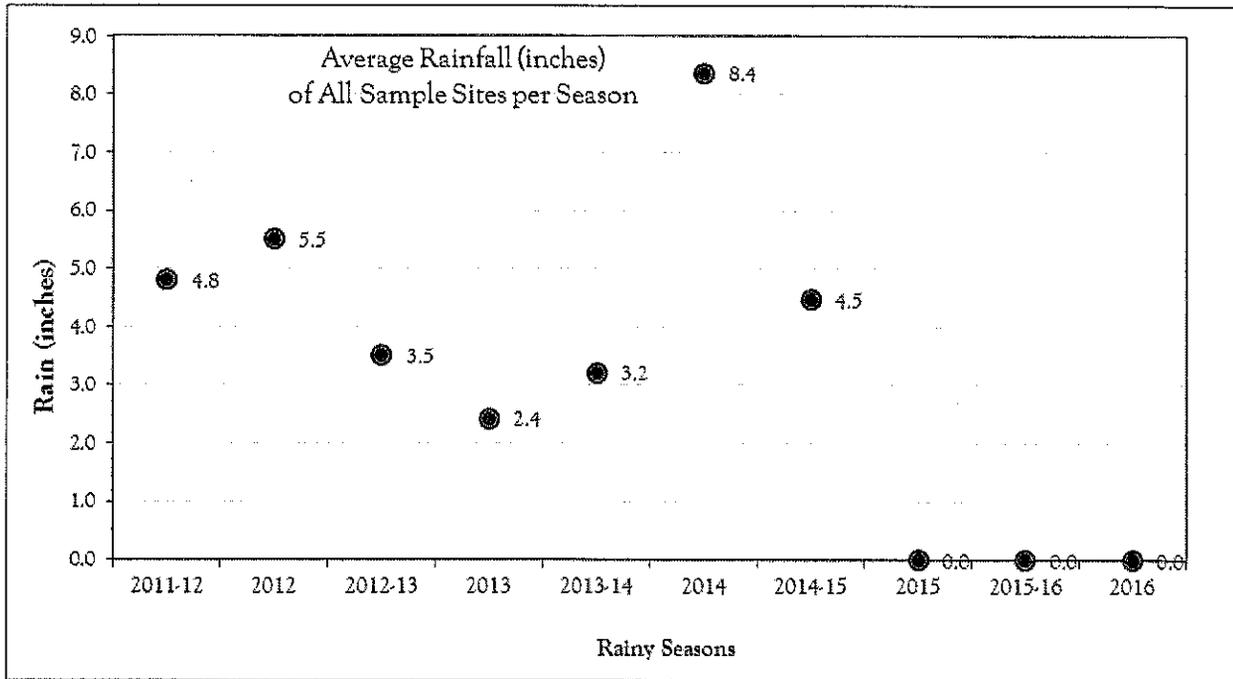
PART 8 STORM EVENT RECORDS

Rainfall (RF) in inches at each site (1,2,3,4,5) along with the status of the site and sampling.

	Date	1	RF	2	RF	3	RF	4	RF	5	RF	
Summer Season	07/01	IF	0.14	IF	0.19	IF	0.11	C	0.19			
	07/02									NC	0.16	
	07/07							C	0.10			
	07/11	IF	0.11			IF	0.1	C	0.11			
	07/12							C	0.14			
	07/15					SC	0.15					
	07/19	IF	0.11	IF	0.18							
	07/20	72	0.26					C	0.31			
	07/24	IF	0.13	IF	0.17			C	0.41			
	07/27							72	0.51			
	08/02	SC	0.44							IF	0.10	
	08/06							IF	0.10			
	08/20				NC	0.63						
	08/25				NF	0.10						
	09/06								SC	0.28	IS	0.34
	09/09				IF	0.18					72	0.13
09/10				72	0.32					72	0.11	
10/28				NF	0.14							
Winter Season	11/03	NF	0.12	NF	0.11			NF	0.13			
	11/22	SC	0.94	SC	0.87	IS	0.33	IS	0.89	EF	0.99	
	11/23					72	1.22	72	1.21	72	1.03	
	12/05					IF	0.23	IF	0.22	EF	0.12	
	12/20					IS	0.35	IS	0.32	SC	0.33	
	03/01					SC	0.42	SC	0.28			

Key

72	Station closed for 72 hours	IS	Insufficient Staff
C	Site Closed -Waiting to sweep streets	LB	Laboratory Closed
DC	Dangerous Conditions	NC	Not on-call -no rain forecasted
EF	Equipment Failure	NF	No Flow
IF	Insufficient Flow (to collect sample)	SC	Sample Collected



PART 9 SUMMARY OF MONITORING DATA (BY LOCATION)

I. Sample Site 1

Site ID: 1 Grant/Wilson Receiving Water: Santa Cruz Land Use: SFR		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/7/11	7/20/12	12/19/12	8/2/13	11/22/13	7/3/14	12/13/14			
Monitoring Parameters	SWQS										
Conventional Parameters											
Flow	n/a	2.01	1.18	1.24	12.57	1.55	2.04	4.49			
pH	6.5 - 9	7.07	7.33	8.55	8.11	8.2	5	5			
Temperature	n/a	54	84	49	84	62	92	58			
Hardness	<400	60	48	53	56	34	110	30			
TDS (mg/L)	n/a	120	180	110	88	69	390	60			
TSS (mg/L)	n/a	180	110	120	250	180	310	68			
BOD (mg/L)	n/a	25	74	110	20	25	21	29			
COD (mg/L)	n/a	230	250	110	190	240	750	70			
Inorganics											
Cyanide, total (ug/L)	84	<100	<100	<5.0	<38	<38	41	<82			
Nutrients (mg/L)											
Nitrate + Nitrite as N	n/a	<0.0015	1.3	<0.1	1.1	1	1.7	0.89			
Ammonia as N	n/a	0.63	1.8	<0.5	0.87	<0.50	3.7	<0.083			
Total Kjeldahl Nitrogen (TKN)	n/a	3.4	4.9	1.9	3.1	2.7	23	1.5			
Total Phosphorus	n/a	0.43	0.38	0.6	2.4	0.44	2.1	0.34			
Total Orthophosphate	n/a	<0.045	0.22	<0.5	0.51	<0.50	0.65	<0.22			
Microbiological (MPN)											
Escherichia coli (E. coli)	575	>2400	2000	>2400	>2400	>2400	2400	>2400			
Total Metals (ug/L)											
Antimony	747	3.1	1.9	0.82	1.6	2.1	1.9	1.7			
Arsenic	200	<4.8	6.7	<40	<4	<40	9	4.6			
Barium	98,000	130	92	66	110	98	160	47			
Beryllium	1,867	<0.19	<2.0	<2.0	<0.17	<2.0	<0.93	<0.93			
Cadmium	<3 ^{Note 1}	<0.31	0.29	<2.0	<0.16	<2.0	<0.82	<0.82			
Chromium	1,000	<0.61	5.1	<30	<0.35	30	8.1	3.1			
Copper	<3 ^{Note 2}	87	50	33	46	47	110	22			
Lead	<17 ^{Note 3}	21	8.6	14	24	21	20	10			
Mercury	5	<0.014	<1.0	0.09	<0.049	<1.0	<0.039	0.077			
Nickel	<882 ^{Note 4}	<1.1	9.6	<50	<4.1	50	16	1.9			
Selenium	33	<0.062	0.68	0.35	0.4	0.14	1.1	<0.082			
Silver	<0.14 ^{Note 5}	<0.46	0.87	0.067	0.23	0.23	<0.029	0.2			
Thallium	75	<0.0036	0.048	<0.063	<0.043	0.055	<0.013	0.023			
Zinc	<235 ^{Note 6}	230	140	100	150	170	310	88			

Site ID: 1 Grant/Wilson Receiving Water: Santa Cruz Land Use: SFR		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/7/11	7/20/12	12/19/12	8/2/13	11/22/13	7/3/14	12/13/14			
SWQS											
Organic Toxic Pollutants (mg/L)											
Total Petroleum Hydrocarbons	n/a	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	3.10			
Total Oil and Grease	n/a	6.4	<5.00	<5.00	<5.00	6	6.4	3.80			
VOCs, Semi-VOCs, and Pesticides (ug/L)											
Acrolein	467	<10		<10	<10			<0.76			
Acrylonitrile	37,333	<10		<10	<10			<0.65			
Benzene	3,733	<2.0		<2.0	<2.0			<0.25			
Bromoform	18,667	<2.0		<2.0	<2.0			<0.33			
Carbon tetrachloride	1,307	<2.0		<2.0	<2.0			<0.18			
Chlorobenzene	18,667	<2.0		<2.0	<2.0			<0.24			
Chlorodibromomethane	n/a	<2.0		<2.0	<2.0			<0.21			
Chloroethane	n/a	<5.0		<5.0	<5.0			<0.17			
2-chloroethylvinyl ether	n/a	<2.0		<10	<10			<0.56			
Chloroform	9,333	<2.0		<2.0	<2.0			<0.19			
Dichlorobromomethane	n/a	<2.0		<2.0	<2.0			<0.20			
1,2-dichlorobenzene	5,900	<2.0		<2.0	<2.0			<0.49			
1,3-dichlorobenzene	n/a	<2.0		<2.0	<2.0			<0.35			
1,4-dichlorobenzene	6,500	<2.0		<2.0	<2.0			<0.41			
1,1-dichloroethane	n/a	<2.0		<2.0	<2.0			<0.17			
1,2-dichloroethane	186,667	<2.0		<2.0	<2.0			<0.21			
1,1-dichloroethylene	46,667	<2.0		<2.0	<2.0			<0.28			
1,2,-dichloropropane	84,000	<2.0		<2.0	<2.0			<2.0			
1,3,-dichloropropylene	n/a	<2.0		<2.0	<2.0			<0.30			
Ethylbenzene	93,333	<2.0		<2.0	<2.0			<0.24			
Methyl bromide (Bromomethane)	n/a	<2.0		<2.0	<2.0			<0.21			
Methyl chloride (Chloromethane)	n/a	<5.0		<5.0	<5.0			<0.28			
Methylene chloride	n/a	<10		<10	<10			<0.28			
1,1,2,2-tetrachloroethane	93,333	<2.0		<2.0	<2.0			<0.50			
Tetrachloroethylene	9,333	<2.0		<2.0	<2.0			<0.29			
Toluene	373,333	<2.0		<2.0	<2.0			0.26			
1,2-trans-dichloroethylene	n/a	<2.0		<2.0	<2.0			<0.23			
1,1,1-trichloroethane	186,666,667	<2.0		<2.0	<2.0			<0.23			
1,1,2-trichloroethane	3,733	<2.0		<2.0	<2.0			<0.32			
Trichloroethylene	280	<2.0		<2.0	<2.0			<0.19			
Trimethylbenzene	n/a			<2.0	<2.0			<2.0			
Vinyl chloride (chloroethylene)	2,800	<2.0		<2.0	<2.0			<0.32			
Xylene	186,667	<6.0		<6.0	<6.0			<0.63			

Site ID: 1 Grant/Wilson Receiving Water: Santa Cruz Land Use: SFR		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/7/11	7/20/12	12/19/12	8/2/13	11/22/13	7/3/14	12/13/14			
SWQS											
SVOCs - Acid Extractables (ug/L)											
2-chlorophenol	4,667	<9.8		<9.8	<10			<0.77			
2,4-dichlorophenol	2,800	<9.8		<9.8	<10			<0.63			
2,4-dimethylphenol	18,667	<9.8		<9.8	<10			<0.54			
4,6-dinitro-o-cresol (4,6-Dinitro-2n	3,733	<20		<20	<20			<0.89			
2,4-dinitrophenol	1,867	<49		<49	<50			<5.0			
2-nitrophenol	n/a	<9.8		<9.8	<10			<3.6			
4-nitrophenol	n/a	<49		<49	<50			<0.54			
p-chloro-m-cresol (4-Chlor-3-methy	n/a	<9.8		<9.8	<10			<0.62			
Pentachlorophenol	<18 ^{Note7}	<29		<29	<1.5			3.6			
Phenol	180,000	<9.8		<9.8	<10			<0.90			
2,4,6-trichlorophenol	130	<9.8		<9.8	<10			<0.82			
SVOCs - Bases/Neutrals (ug/L)											
Acenaphthene	56,000	<4.9		<4.9	<5.0			<0.73			
Acenaphthylene	n/a	<4.9		<4.9	<5.0			<0.62			
Anthracene	280,000	<4.9		<4.9	<5.0			<0.70			
Benzo(a)anthracene	0.2	<0.63		<0.6	<0.62			<0.76			
Benzo(a)pyrene	0.2	<0.51		<4.9	<0.77			<0.56			
Benzo(b)fluoranthene	n/a	<9.8		<1.6	<1.6			<1.3			
Benzo(g,h,i)perylene	n/a	<4.9		<4.9	<5.0			<1.6			
Benzo(k)fluoranthene	1.9	<1.3		<1.6	<1.6			<1.3			
Chrysene	19	<4.9		<4.9	<5.0			<0.67			
Dibenzo(a,h)anthracene	1.9	0.48		<0.93	<0.96			<0.91			
3,3'-dichlorobenzidine	3	<1.1		<0.99	<1.0			<1.5			
Diethyl phthalate	746,667	<9.8		<9.8	<10			<1.1			
Dimethyl phthalate	n/a	<9.8		<9.8	<10			<0.56			
Di-n-butyl phthalate	n/a	<9.8		<9.8	<10			3.1			
2,4-dinitrotoluene	1,867	<9.8		<9.8	<10			<1.0			
2,6-dinitrotoluene	3,733	<9.8		<9.8	<10			<1.1			
Di-n-octyl phthalate	373,333	<9.8		<9.8	<10			1.3			
1,2-diphenylhydrazine (as azobenz	1.8	<9.8		<9.8	<10			<1.0			
Fluoranthene	37,333	<4.9		<4.9	<5.0			<0.81			
Fluorene	37,333	<4.9		<4.9	<5.0			<0.60			
Hexachlorobenzene	747	<9.8		<9.8	<10			<1.1			
Hexachlorobutadiene	187	<9.8		<9.8	<10			<1.1			
Hexachlorocyclopentadiene	11,200	<9.8		<9.8	<10			<0.71			
Hexachloroethane	850	<9.8		<9.8	<10			<1.4			
Indeno(1,2,3-cd)pyrene	1.9	0.91		<0.8	<0.83			<1.2			
Isophorone	186,667	<9.8		<9.8	<10			<0.82			

Site ID: I Grant/Wilson Receiving Water: Santa Cruz Land Use: SFR		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/7/11	7/20/12	12/19/12	8/2/13	11/22/13	7/3/14	12/13/14			
SWQS											
SVOCs - Bases/Neutrals (ug/L) continued											
Naphthalene	18,667	<4.9		<4.9	<5.0			<0.78			
Nitrobenzene	467	<9.8		<9.8	<10			<1.1			
N-nitrosodimethylamine	0.03	<0.18		<1.6	<1.6			<2.3			
N-nitrosodi-n-propylamine	88,667	<9.8		<9.8	<10			<1.1			
N-nitrosodiphenylamine	n/a	<9.8		<9.8	<10			<0.89			
Phenanthrene	n/a	<4.9		<4.9	<5.0			<0.63			
Pyrene	28,000	<4.9		<4.9	<5.0			<0.57			
1,2,4-trichlorobenzene	9,333	<9.8		<9.8	<10			<0.96			
Pesticides (ug/L)											
Aldrin	<0.003 ^{Noted}	<0.097		<0.098	<0.10			<0.016			
Alpha-BHC	n/a	<0.097		<0.098	<0.10			<0.010			
Beta-BHC	n/a	<0.097		<0.098	<0.10			<0.017			
Gamma-BHC	n/a	<0.097		<0.098	<0.10			<0.023			
Delta-BHC	n/a	<0.097		<0.098	<0.10			<0.012			
Chlordane (alpha, gamma)	3.2	<0.097		<0.0134	<0			<0.0078			
4,4'-DDT	n/a	<0.097		<0.098	<0.10			<0.014			
4,4'-DDE	n/a	<0.097		<0.098	<0.10			<0.010			
4,4'-DDD	n/a	<0.097		<0.098	<0.10			<0.010			
Dieldrin	<0.003 ^{Noted}	<0.097		<0.098	<0.10			<0.0084			
Alpha-endosulfan (Endosulfan I)	n/a	<0.097		<0.098	<0.10			<0.0091			
Beta-endosulfan (Endosulfan II)	n/a	<0.097		<0.098	<0.10			<0.0061			
Endosulfan sulfate	3	<0.097		<0.098	<0.10			<0.059			
Endrin	0.004	<0.097		<0.098	<0.10			<0.011			
Endrin aldehyde	0.7	<0.097		<0.098	<0.10			<0.0090			
Heptachlor	0.9	<0.097		<0.098	<0.10			<0.0083			
Heptachlor epoxide	0.9	<0.097		<0.098	<0.10			<0.013			
PCB-1016 (Aroclor 1016)	n/a	<0.09		<0.97	<1.0			<0.93			
PCB-1221 (Aroclor 1221)	n/a	<0.09		<0.97	<1.0			<1.0			
PCB-1232 (Aroclor 1232)	n/a	<0.09		<0.97	<1.0			<1.0			
PCB-1242 (Aroclor 1242)	n/a	<0.09		<0.97	<1.0			<1.0			
PCB-1248 (Aroclor 1248)	n/a	<0.09		<0.97	<1.0			<1.0			
PCB-1254 (Aroclor 1254)	n/a	<0.09		<0.97	<1.0			<1.0			
PCB-1260 (Aroclor 1260)	n/a	<0.09		<0.97	<1.0			<0.61			
Toxaphene	0.005	<0.97		<0.98	<1.0			<1.0			

II. Sample Site 2

Site ID: 2 Greenlee Receiving Water: Rillito Wash Land Use: Multi-Family Residential		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		3/18/12	7/15/12	1/26/13		11/22/13	8/12/14	12/4/14			
Monitoring Parameters	SWQS										
Conventional Parameters											
Flow	n/a	0.1	3.32	1.02		0.19	0.09	0.19			
pH	6.5 - 9	7.97	8.61	6.3		7.09	7.4	6.5			
Temperature	n/a	49	79	62		59	82	55			
Hardness	<400	30	27	16		10	32	11			
TDS (mg/L)	n/a	160	79	43		24	71	34			
TSS (mg/L)	n/a	15	70	24		<10	87	<10			
BOD (mg/L)	n/a	37	16	20		15	15	12			
COD (mg/L)	n/a	160	89	64		51	110	42			
Inorganics											
Cyanide, total (ug/L)	84	<100	<100	<100		<100	<38	<82			
Nutrients (mg/L)											
Nitrate + Nitrite as N	n/a	<0.1	<0.1	<0.10		<0.6	0.74	0.50			
Ammonia as N	n/a	0.87	<0.5	0.56		1.1	0.72	<0.50			
Total Kjeldahl Nitrogen (TKN)	n/a	2.5	2.2	1.2		1.8	2.8	1.0			
Total Phosphorus	n/a	0.32	0.36	0.35		0.1	0.4	0.38			
Total Orthophosphate	n/a	<0.50	0.19	<0.50		<0.50	<0.5	<0.50			
Microbiological (MPN)											
Escherichia coli (E. coli)	575	87	>2400	770		54	32	2400			
Total Metals (ug/L)											
Antimony	747	<0.50	0.34	0.25		0.3	<0.5	<0.50			
Arsenic	200	<40	<40	<40		<40	8	<4.5			
Barium	98,000	<50	49	<50		<50	<50	<50			
Beryllium	1,867	<2.0	<2	<2.0		<2.0	<2.0	<0.93			
Cadmium	<3 ^{Note 1}	<2.0	0.4	<2.0		<2.0	<2.0	<0.82			
Chromium	1,000	<30	1.8	<30		<30	2.8	<0.61			
Copper	<3 ^{Note 2}	<20	19	<20		<20	23	<20			
Lead	<17 ^{Note 3}	0.96	2.7	1.4		0.49	3.8	<0.50			
Mercury	5	<1.0	<1	<1.0		<1.0	<0.039	0.11			
Nickel	<882 ^{Note 4}	<50	3	<50		<50	2.4	2.2			
Selenium	33	<2.5	0.26	<2.5		0.18	0.39	<0.082			
Silver	<0.14 ^{Note 5}	<10	0.99	0.014		<0.007	<0.029	0.049			
Thallium	75	<0.50	0.022	<0.5		<0.043	<0.013	<0.013			
Zinc	<235 ^{Note 6}	56	78	<40		<40	76	<40			

Site ID: 2 Greenlee Receiving Water: Rillito Wash Land Use: Multi-Family Residential		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		3/18/12	7/15/12	1/26/13		11/22/13	8/12/14	12/4/14			
SWQS											
Organic Toxic Pollutants (mg/L)											
Total Petroleum Hydrocarbons	n/a	<5.00	<5.00	<5.00		<5.00	<5.00	<5.00			
Total Oil and Grease	n/a	<5.00	<5.00	<5.00		<5.00	<5.00	<5.00			
VOCs, Semi-VOCs, and Pesticides (ug/L)											
Acrolein	467	<10		<10				<10			
Acrylonitrile	37,333	<10		<10				<10			
Benzene	3,733	<2.0		<2.0				<2.0			
Bromoform	18,667	<2.0		<2.0				<2.0			
Carbon tetrachloride	1,307	<2.0		<2.0				<2.0			
Chlorobenzene	18,667	<2.0		<2.0				<2.0			
Chlorodibromomethane	n/a	<2.0		<2.0				<2.0			
Chloroethane	n/a	<5.0		<5.0				<5.0			
2-chloroethylvinyl ether	n/a	<2.0		<10				<10			
Chloroform	9,333	<2.0		<2.0				<2.0			
Dichlorobromomethane	n/a	<2.0		<2.0				<2.0			
1,2-dichlorobenzene	5,900	<2.0		<2.0				<2.0			
1,3-dichlorobenzene	n/a	<2.0		<2.0				<2.0			
1,4-dichlorobenzene	6,500	<2.0		<2.0				<2.0			
1,1-dichloroethane	n/a	<2.0		<2.0				<2.0			
1,2-dichloroethane	186,667	<2.0		<2.0				<2.0			
1,1-dichloroethylene	46,667	<2.0		<2.0				<2.0			
1,2-dichloropropane	84,000	<2.0		<2.0				<2.0			
1,3-dichloropropylene	n/a	<2.0		<2.0				<4.0			
Ethylbenzene	93,333	<2.0		<2.0				<2.0			
Methyl bromide (Bromomethane)	n/a	<2.0		<2.0				<2.0			
Methyl chloride (Chloromethane)	n/a	<5.0		<5.0				<5.0			
Methylene chloride	n/a	<10		<10				<10			
1,1,2,2-tetrachloroethane	93,333	<2.0		<2.0				<2.0			
Tetrachloroethylene	9,333	<2.0		<2.0				<2.0			
Toluene	373,333	<2.0		<2.0				<2.0			
1,2-trans-dichloroethylene	n/a	<2.0		<2.0				<2.0			
1,1,1-trichloroethane	186,666,667	<2.0		<2.0				<2.0			
1,1,2-trichloroethane	3,733	<2.0		<2.0				<2.0			
Trichloroethylene	280	<2.0		<2.0				<2.0			
Trimethylbenzene	n/a			<2.0				<4.0			
Vinyl chloride (chloroethylene)	2,800	<2.0		<2.0				<2.0			
Xylene	186,667	<6.0		<6.0				<6.0			

Site ID: 2 Greenlee Receiving Water: Rillito Wash Land Use: Multi-Family Residential		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		3/18/12	7/15/12	1/26/13		11/22/13	8/12/14	12/4/14			
SWQS											
SVOCs - Acid Extractables (ug/L)											
2-chlorophenol	4,667	<9.8		<9.9				<10			
2,4-dichlorophenol	2,800	<9.8		<9.9				<10			
2,4-dimethylphenol	18,667	<9.8		<9.9				<10			
4,6-dinitro-o-cresol (4,6-Dinitro-2n	3,733	<20		<20				<21			
2,4-dinitrophenol	1,867	<49		<50				<51			
2-nitrophenol	n/a	<9.8		<9.9				<10			
4-nitrophenol	n/a	<49		<50				<51			
p-chloro-m-cresol (4-Chlor-3-methy	n/a	<9.8		<9.9				<10			
Pentachlorophenol	<18 ^{Note7}	<29		<30				<31			
Phenol	180,000	<9.8		<9.9				<10			
2,4,6-trichlorophenol	130	<9.8		<9.9				<10			
SVOCs - Bases/Neutrals (ug/L)											
Acenaphthene	56,000	<4.9		<5.0				<5.1			
Acenaphthylene	n/a	<4.9		<5.0				<5.1			
Anthracene	280,000	<4.9		<5.0				<5.1			
Benzo(a)anthracene	0.2	<0.63		<5.0				<0.78			
Benzo(a)pyrene	0.2	<0.51		<0.75				<0.57			
Benzo(b)fluoranthene	n/a	<9.8		<1.6				<1.3			
Benzo(g,h,i)perylene	n/a	<4.9		<5.0				<5.1			
Benzo(k)fluoranthene	1.9	<1.3		<1.6				<1.3			
Chrysene	19	<4.9		<5.0				<5.1			
Dibenzo(a,h)anthracene	1.9	0.48		<0.94				<0.93			
3,3'-dichlorobenzidine	3	<1.1		<1.0				<1.5			
Diethyl phthalate	746,667	<9.8		<9.9				<10			
Dimethyl phthalate	n/a	<9.8		<9.9				<10			
Di-n-butyl phthalate	n/a	<9.8		<9.9				<10			
2,4-dinitrotoluene	1,867	<9.8		<9.9				<10			
2,6-dinitrotoluene	3,733	<9.8		<9.9				<10			
Di-n-octyl phthalate	373,333	<9.8		<9.9				<10			
1,2-diphenylhydrazine (as azobenz	1.8	<9.8		<9.9				<10			
Fluoranthene	37,333	<4.9		<5.0				<5.1			
Fluorene	37,333	<4.9		<5.0				<5.1			
Hexachlorobenzene	747	<9.8		<9.9				<10			
Hexachlorobutadiene	187	<9.8		<9.9				<10			
Hexachlorocyclopentadiene	11,200	<9.8		<9.9				<10			
Hexachloroethane	850	<9.8		<9.9				<10			
Indeno(1,2,3-cd)pyrene	1.9	0.91		<0.81				<1.2			
Isophorone	186,667	<9.8		<9.9				<10			

Site ID: 2 Greenlee Receiving Water: Rillito Wash Land Use: Multi-Family Residential		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		3/18/12	7/15/12	1/26/13		11/22/13	8/12/14	12/4/14			
SWQS											
SVOCs - Bases/Neutrals (ug/L) continued											
Naphthalene	18,667	<4.9		<5.0				<5.1			
Nitrobenzene	467	<9.8		<9.9				<10			
N-nitrosodimethylamine	0.03	<0.18		<1.6				<2.3			
N-nitrosodi-n-propylamine	88,667	<9.8		<9.9				<10			
N-nitrosodiphenylamine	n/a	<9.8		<9.9				<10			
Phenanthrene	n/a	<4.9		<5.0				<5.1			
Pyrene	28,000	<4.9		<5.0				<5.1			
1,2,4-trichlorobenzene	9,333	<9.8		<9.9				<10			
Pesticides (ug/L)											
Aldrin	<0.003 ^{NoteB}	<0.097		<0.099				<0.10			
Alpha-BHC	n/a	<0.097		<0.099				<0.10			
Beta-BHC	n/a	<0.097		<0.099				<0.10			
Gamma-BHC	n/a	<0.097		<0.099				<0.10			
Delta-BHC	n/a	<0.097		<0.099				<0.10			
Chlordane (alpha, gamma)	3.2	<0.097		<0.099				<0.2			
4,4'-DDT	n/a	<0.097		<0.099				<0.10			
4,4'-DDE	n/a	<0.097		<0.099				<0.10			
4,4'-DDD	n/a	<0.097		<0.099				<0.10			
Dieldrin	<0.003 ^{NoteB}	<0.097		<0.099				<0.10			
Alpha-endosulfan (Endosulfan I)	n/a	<0.097		<0.099				<0.10			
Beta-endosulfan (Endosulfan II)	n/a	<0.097		<0.099				<0.10			
Endosulfan sulfate	3	<0.097		<0.099				<0.10			
Endrin	0.004	<0.097		<0.099				<0.10			
Endrin aldehyde	0.7	<0.097		<0.099				<0.10			
Heptachlor	0.9	<0.097		<0.099				<0.10			
Heptachlor epoxide	0.9	<0.097		<0.099				<0.10			
PCB-1016 (Aroclor 1016)	n/a	<0.09		<1.0				<0.99			
PCB-1221 (Aroclor 1221)	n/a	<0.09		<1.0				<0.99			
PCB-1232 (Aroclor 1232)	n/a	<0.09		<1.0				<0.99			
PCB-1242 (Aroclor 1242)	n/a	<0.09		<1.0				<0.99			
PCB-1248 (Aroclor 1248)	n/a	<0.09		<1.0				<0.99			
PCB-1254 (Aroclor 1254)	n/a	<0.09		<1.0				<0.99			
PCB-1260 (Aroclor 1260)	n/a	<0.09		<1.0				<0.99			
Toxaphene	0.005	<0.99		<0.99				<1.0			

III. Sample Site 3

Site ID: 3 Randolph/Broadway Receiving Water: Santa Cruz Land Use: Commercial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		12/12/11	7/20/12	2/20/13	7/15/13	3/1/14	7/16/14	12/4/14			
Monitoring Parameters	SWQS										
Conventional Parameters											
Flow	n/a	1.59	2.25	1.25	1.15	3.73	5.75	0.8457			
pH	6.5 - 9	6.74	8.39	7.5	5	5.5	5.5	6.5			
Temperature	n/a	54	88	44	86	59	92	55*			
Hardness	<400	23	28	25	48	20	51	21			
TDS (mg/L)	n/a	33	92	63	120	40	66	48			
TSS (mg/L)	n/a	86	57	59	120	93	100	52			
BOD (mg/L)	n/a	20	100	15	10	10	11	24			
COD (mg/L)	n/a	140	110	130	180	110	110	120			
Inorganics											
Cyanide, total (ug/L)	84	<100	<100	<100	<38	<38	85	<82			
Nutrients (mg/L)											
Nitrate + Nitrite as N	n/a	<0.0015	<0.10	<0.1	<0.1	<0.1	0.57	0.59			
Ammonia as N	n/a	<1.0	1.3	0.63	1.4	0.58	1.1	0.72			
Total Kjeldahl Nitrogen (TKN)	n/a	0.58	2.3	1.3	13	1.6	0.63	2			
Total Phosphorus	n/a	0.19	0.25	0.16	0.5	0.24	0.23	0.39			
Total Orthophosphate	n/a	<0.045	0.13	<0.50	<0.50	<0.50	<0.50	<0.50			
Microbiological (MPN)											
Escherichia coli (E. coli)	575	770	370	580	130	170	1600	610			
Total Metals (ug/L)											
Antimony	747	3.3	3.5	2	4	3.5	3.9	2.0			
Arsenic	200	<4.8	<40	<40	<40	<40	8.4	6.1			
Barium	98,000	60	50	57	80	64	60	<50			
Beryllium	1,867	<0.19	<2.0	<2.0	<2.0	<2.0	0.93	<0.93			
Cadmium	<3 ^{Note 1}	<0.31	0.44	<2.0	<2.0	<2.0	0.82	<0.82			
Chromium	1,000	<0.61	3.6	<30	<30	<30	3.7	1.8			
Copper	<3 ^{Note 2}	61	34	44	60	60	35	37			
Lead	<17 ^{Note 3}	19	7.9	12	16	20	14	6.4			
Mercury	5	<0.014	<1.0	<0.032	0.12	0.11	0.058	0.12			
Nickel	<882 ^{Note 4}	<1.1	4.8	<50	<50	<50	4.3	3.5			
Selenium	33	<0.062	<2.5	1.7	0.24	0.14	0.082	0.12			
Silver	<0.14 ^{Note 5}	<0.46	0.95	0.0054	0.086	0.21	0.12	0.13			
Thallium	75	<0.0036	0.018	0.018	<0.50	2.5	0.052	<0.013			
Zinc	<235 ^{Note 6}	240	150	190	250	190	120	160			

*temperature was estimated

Site ID: 3 Randolph/Broadway Receiving Water: Santa Cruz Land Use: Commercial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		12/12/11	7/20/12	2/20/13	7/15/13	3/1/14	7/16/14	12/4/14			
SWQS											
Organic Toxic Pollutants (mg/L)											
Total Petroleum Hydrocarbons	n/a	8	<5	<5.00	<5.00	<5.00	<5.00	<5.00			
Total Oil and Grease	n/a	7.4	<5	5.9	<5.00	6	0.42	<5.00			
VOCs, Semi-VOCs, and Pesticides (ug/L)											
Acrolein	467	<0		<10	<10			<10			
Acrylonitrile	37,333	<0.92		<10	<10			<10			
Benzene	3,733	<0.25		<2.0	<2.0			<2.0			
Bromoform	18,667	<0.33		<2.0	<2.0			<2.0			
Carbon tetrachloride	1,307	<0.18		<2.0	<2.0			<2.0			
Chlorobenzene	18,667	<0.24		<2.0	<2.0			<2.0			
Chlorodibromomethane	n/a	<0.20		<2.0	<2.0			<2.0			
Chloroethane	n/a	<0.17		<5.0	<5.0			<5.0			
2-chloroethylvinyl ether	n/a	<0.31		<10	<10			<10			
Chloroform	9,333	<0.19		<2.0	<2.0			<2.0			
Dichlorobromomethane	n/a	<0.21		<2.0	<2.0			<2.0			
1,2-dichlorobenzene	5,900	<0.48		<2.0	<2.0			<2.0			
1,3-dichlorobenzene	n/a	<0.35		<2.0	<2.0			<2.0			
1,4-dichlorobenzene	6,500	<0.41		<2.0	<2.0			<2.0			
1,1-dichloroethane	n/a	<0.17		<2.0	<2.0			<2.0			
1,2-dichloroethane	186,667	<0.21		<2.0	<2.0			<2.0			
1,1-dichloroethylene	46,667	<0.28		<2.0	<2.0			<2.0			
1,2,-dichloropropane	84,000	<0.0		<2.0	<2.0			<2.0			
1,3,-dichloropropylene	n/a	<0.30		<2.0	<2.0			<4.0			
Ethylbenzene	93,333	<0.24		<2.0	<2.0			<2.0			
Methyl bromide (Bromomethane)	n/a	<0.21		<2.0	<2.0			<2.0			
Methyl chloride (Chloromethane)	n/a	<0.28		<5.0	<5.0			<5.0			
Methylene chloride	n/a	<0.28		<10	<10			<10			
1,1,2-tetrachloroethane	93,333	<0.50		<2.0	<2.0			<2.0			
Tetrachloroethylene	9,333	<0.29		<2.0	<2.0			<2.0			
Toluene	373,333	<0.22		<2.0	<2.0			<2.0			
1,2-trans-dichloroethylene	n/a	<0.23		<2.0	<2.0			<2.0			
1,1,1-trichloroethane	186,666,667	<0.23		<2.0	<2.0			<2.0			
1,1,2-trichloroethane	3,733	<0.32		<2.0	<2.0			<2.0			
Trichloroethylene	280	<0.19		<2.0	<2.0			<2.0			
Trimethylbenzene	n/a			<2.0	<2.0			<4.0			
Vinyl chloride (chloroethylene)	2,800	<0.32		<2.0	<2.0			<2.0			
Xylene	186,667	<0.63		<6.0	<6.0			<6.0			

Site ID: 3 Randolph/Broadway Receiving Water: Santa Cruz Land Use: Commercial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		12/12/11	7/20/12	2/20/13	7/15/13	3/1/14	7/16/14	12/4/14			
SWQS											
SVOCs - Acid Extractables (ug/L)											
2-chlorophenol	4,667	<9.2		<20	<10			<10			
2,4-dichlorophenol	2,800	<7.9		<20	<10			<10			
2,4-dimethylphenol	18,667	<2.4		<20	<10			<10			
4,6-dinitro-o-cresol (4,6-Dinitro-2n	3,733	<12		<41	<21			<20			
2,4-dinitrophenol	1,867	<14		<100	<52			<50			
2-nitrophenol	n/a	<7.3		<20	<10			<10			
4-nitrophenol	n/a	<5.1		<100	<52			<50			
p-chloro-m-cresol (4-Chlor-3-methy	n/a	<4.1		<20	<10			<10			
Pentachlorophenol	<18 ^{Note7}	<9.2		<3	<1.5			3.4			
Phenol	180,000	<19		<20	<10			<10			
2,4,6-trichlorophenol	130	<8.4		<20	<10			<10			
SVOCs - Bases/Neutrals (ug/L)											
Acenaphthene	56,000	<5.1		<10	<5.2			<5.0			
Acenaphthylene	n/a	<5.0		<10	<5.2			<5.0			
Anthracene	280,000	<5.3		<10	<5.2			<5.0			
Benzo(a)anthracene	0.2	<6.3		<1.2	<0.63			<0.76			
Benzo(a)pyrene	0.2	<5.0		<1.5	<0.79			<0.56			
Benzo(b)fluoranthene	n/a	<13		<3.3	<10			<1.3			
Benzo(g,h,i)perylene	n/a	<7.4		<10	<5.2			<5.0			
Benzo(k)fluoranthene	1.9	<13		<3.3	<1.7			<5.0			
Chrysene	19	<2.5		<10	<5.2			<5.0			
Dibenzo(a,h)anthracene	1.9	<3.7		<1.9	<0.98			<0.91			
3,3'-dichlorobenzidine	3	<11		<2	<10			<1.5			
Diethyl phthalate	746,667	<2.3		<20	<5.2			<10			
Dimethyl phthalate	n/a	<3.2		<20	<10			<10			
Di-n-butyl phthalate	n/a	<18		<20	<10			<10			
2,4-dinitrotoluene	1,867	<2.1		<20	<10			<10			
2,6-dinitrotoluene	3,733	<1.8		<20	<10			<10			
Di-n-octyl phthalate	373,333	<4.5		<20	<10			<10			
1,2-diphenylhydrazine	1.8	<9.7		<5.1	<10			<10			
Fluoranthene	37,333	<5.9		<10	<5.2			<5.0			
Fluorene	37,333	<5.8		<10	<5.2			<5.0			
Hexachlorobenzene	747	<7.6		<20	<10			<10			
Hexachlorobutadiene	187	<2.1		<20	<10			<10			
Hexachlorocyclopentadiene	11,200	<9.7		<20	<10			<10			
Hexachloroethane	850	<2.2		<20	<10			<10			
Indeno(1,2,3-cd)pyrene	1.9	<6.9		<1.7	<0.85			<1.2			
Isophorone	186,667	<1.8		<20	<10			<10			

Site ID: 3 Randolph/Broadway Receiving Water: Santa Cruz Land Use: Commercial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		12/12/11	7/20/12	2/20/13	7/15/13	3/1/14	7/16/14	12/4/14			
SWQS											
SVOCs - Bases/Neutrals (ug/L) continued											
Naphthalene	18,667	<5.6		<10	<5.2			<5.0			
Nitrobenzene	467	<3.0		<20	<10			<10			
N-nitrosodimethylamine	0.03	<1.7		<3.3	<1.7			<2.3			
N-nitrosodi-n-propylamine	88,667	<2.4		<20	<10			<10			
N-nitrosodiphenylamine	n/a	<7.2		<20	<10			<10			
Phenanthrene	n/a	<4.8		<10	<5.2			<5.0			
Pyrene	28,000	<5.8		<10	<5.2			<5.0			
1,2,4-trichlorobenzene	9,333	<1.7		<20	<10			<10			
Pesticides (ug/L)											
Aldrin	<0.003 ^{Note8}	<0.0098		<0.10	<0.10			<0.10			
Alpha-BHC	n/a	<0.020		<0.10	<0.10			<0.10			
Beta-BHC	n/a	<0.020		<0.10	<0.10			<0.10			
Gamma-BHC	n/a	<0.0098		<0.10	<0.10			<0.10			
Delta-BHC	n/a	<0.020		<0.10	<0.10			<0.10			
Chlordane (alpha, gamma)	3.2	<0.0076		<0.10	<0.10			<0.2			
4,4'-DDT	n/a	<0.0029		<0.10	<0.10			<0.10			
4,4'-DDE	n/a	<0.0069		<0.10	<0.10			<0.10			
4,4'-DDD	n/a	<0.0098		<0.10	<0.10			<0.10			
Dieldrin	<0.003 ^{Note8}	<0.0049		<0.10	<0.10			<0.10			
Alpha-endosulfan (Endosulfan I)	n/a	<0.0098		<0.10	<0.10			<0.10			
Beta-endosulfan (Endosulfan II)	n/a	<0.029		<0.10	<0.10			<0.10			
Endosulfan sulfate	3	<0.088		<0.10	<0.10			<0.10			
Endrin	0.004	<0.0059		<0.10	<0.10			<0.10			
Endrin aldehyde	0.7	<0.0049		<0.10	<0.10			<0.10			
Heptachlor	0.9	<0.020		<0.10	<0.10			<0.10			
Heptachlor epoxide	0.9	<0.020		<0.10	<0.10			<0.10			
PCB-1016 (Aroclor 1016)	n/a	<0.089		<0.98	<1.1			<1.0			
PCB-1221 (Aroclor 1221)	n/a	<0.97		<0.98	<1.1			<1.0			
PCB-1232 (Aroclor 1232)	n/a	<0.97		<0.98	<1.1			<1.0			
PCB-1242 (Aroclor 1242)	n/a	<0.97		<0.98	<1.1			<1.0			
PCB-1248 (Aroclor 1248)	n/a	<0.97		<0.98	<1.1			<1.0			
PCB-1254 (Aroclor 1254)	n/a	<0.97		<0.98	<1.1			<1.0			
PCB-1260 (Aroclor 1260)	n/a	<0.060		<0.98	<1.1			<1.0			
Toxaphene	0.005	<0.98		<0.10	<1.0			<1.0			

IV. Sample Site 4

Site ID: 4 17th Street Receiving Water: Santa Cruz Land Use: Industrial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/13/11	7/15/12	2/20/13	9/6/13	3/1/14	7/5/14	12/13/14			
Monitoring Parameters	SWQS										
Conventional Parameters											
Flow	n/a	3.82	1.89	0.9	2.43	2.43	0.54	3.08			
pH	6.5 - 9	7.95	7.78	7.7	6	6.5	7.2	7.03			
Temperature	n/a	60	75	44	94	59	82	58			
Hardness	<400	60	76	180	390	280	170	42			
TDS (mg/L)	n/a	98	44	130	170	100	490	64			
TSS (mg/L)	n/a	170	200	590	1100	650	300	77			
BOD (mg/L)	n/a	10	14	26	25	13	23	25			
COD (mg/L)	n/a	96	140	370	420	230	660	76			
Inorganics											
Cyanide, total (ug/L)	84	<100	<100	<100	<38	<38	65	<82			
Nutrients (mg/L)											
Nitrate + Nitrite as N	n/a	<0.0015	<0.10	<0.10	1	0.62	3.5	0.61			
Ammonia as N	n/a	<0.068	0.74	0.99	0.96	0.81	3.2	<0.083			
Total Kjeldahl Nitrogen (TKN)	n/a	1.5	1.7	2.4	4.3	2.2	17	1.6			
Total Phosphorus	n/a	0.33	0.39	0.5	2.6	0.75	1.3	0.25			
Total Orthophosphate	n/a	<0.045	0.12	<0.5	<0.50	<0.50	<0.22	<0.22			
Microbiological (MPN)											
Escherichia coli (E. coli)	575	>2400	>2400	54	>2400	1000	2400	>2400			
Total Metals (ug/L)											
Antimony	747	1.2	1.2	2.5	1.9	0.97	4	1.3			
Arsenic	200	<4.8	6.1	<40	<4.0	23	12	7.7			
Barium	98,000	72	100	270	450	280	190	45			
Beryllium	1,867	<0.19	<2.0	<2.0	<0.17	<2.0	<0.93	<0.93			
Cadmium	<3 ^{Note 1}	<0.31	0.5	<2.0	<0.16	<0.16	<0.82	<0.82			
Chromium	1,000	<0.61	5.5	<30	<0.35	15	11	3.5			
Copper	<3 ^{Note 2}	52	67	160	340	130	190	24			
Lead	<17 ^{Note 3}	16	19	42	80	51	20	7.6			
Mercury	5	<0.014	<1.0	<0.032	0.16	0.31	<0.039	0.081			
Nickel	<882 ^{Note 4}	<1.1	6	<50	<4.1	14	6.3	2.6			
Selenium	33	<0.062	0.32	1.9	0.44	<0.082	1.7	<0.082			
Silver	<0.14 ^{Note 5}	<0.46	0.85	0.24	1	0.51	<0.029	0.19			
Thallium	75	<0.0036	0.063	0.1	0.18	0.16	<0.013	0.022			
Zinc	<235 ^{Note 6}	190	220	440	800	330	690	110			

Site ID: 4 17th Street Receiving Water: Santa Cruz Land Use: Industrial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/13/11	7/15/12	2/20/13	9/6/13	3/1/14	7/5/14				
SWQS											
Organic Toxic Pollutants (mg/L)											
Total Petroleum Hydrocarbons	n/a	<5.00	<5.00	<5.00	6.1	<5.00	<5.00	2.70			
Total Oil and Grease	n/a	<0.570	11.5	8.5	40.5	8.4	<5.00	5.80			
VOCs, Semi-VOCs, and Pesticides (ug/L)											
Acrolein	467	<10		<10	<10			<0.76			
Acrylonitrile	37,333	<0.92		<10	<10			<0.65			
Benzene	3,733	<0.25		<2.0	<2.0			<0.25			
Bromoform	18,667	<0.33		<2.0	<2.0			<0.33			
Carbon tetrachloride	1,307	<0.18		<2.0	<2.0			<0.18			
Chlorobenzene	18,667	<0.24		<2.0	<2.0			<0.24			
Chlorodibromomethane	n/a	<0.21		<2.0	<2.0			<0.21			
Chloroethane	n/a	<0.17		<5.0	<5.0			<0.17			
2-chloroethylvinyl ether	n/a	<0.31		<10	<10			<0.56			
Chloroform	9,333	<0.19		<2.0	<2.0			<0.19			
Dichlorobromomethane	n/a	<0.20		<2.0	<2.0			<0.20			
1,2-dichlorobenzene	5,900	<0.48		<2.0	<2.0			<0.49			
1,3-dichlorobenzene	n/a	<0.35		<2.0	<2.0			<0.35			
1,4-dichlorobenzene	6,500	<0.41		<2.0	<2.0			<0.41			
1,1-dichloroethane	n/a	<0.17		<2.0	<2.0			<0.17			
1,2-dichloroethane	186,667	<0.21		<2.0	<2.0			<0.21			
1,1-dichloroethylene	46,667	<0.28		<2.0	<2.0			<0.28			
1,2-dichloropropane	84,000	<2.0		<2.0	<2.0			<2.0			
1,3-dichloropropylene	n/a	<0.17		<4.0	<4.0			<0.30			
Ethylbenzene	93,333	<0.24		<2.0	<2.0			<0.24			
Methyl bromide (Bromomethane)	n/a	<0.21		<2.0	<2.0			<0.21			
Methyl chloride (Chloromethane)	n/a	<0.28		<5.0	<5.0			<0.28			
Methylene chloride	n/a	<0.28		<10	<10			<0.28			
1,1,2,2-tetrachloroethane	93,333	<0.50		<2.0	<2.0			<0.50			
Tetrachloroethylene	9,333	<0.29		<2.0	<2.0			<0.29			
Toluene	373,333	<0.22		<2.0	<2.0			<0.22			
1,2-trans-dichloroethylene	n/a	<0.23		<2.0	<2.0			<0.23			
1,1,1-trichloroethane	186,666,667	<0.23		<2.0	<2.0			<0.23			
1,1,2-trichloroethane	3,733	<0.32		<2.0	<2.0			<0.32			
Trichloroethylene	280	<0.19		<2.0	<2.0			<0.19			
Trimethylbenzene	n/a			<2.0	<2.0			<2.0			
Vinyl chloride (chloroethylene)	2,800	<0.32		<2.0	<2.0			<0.32			
Xylene	186,667	<0.63		<6.0	<6.0			<0.63			

Site ID: 4 17th Street Receiving Water: Santa Cruz Land Use: Industrial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/13/11	7/15/12	2/20/13	9/6/13	3/1/14	7/5/14				
SWQS											
SVOCs - Acid Extractables (ug/L)											
2-chlorophenol	4,667	<9.2		<20	<20			<0.77			
2,4-dichlorophenol	2,800	<7.9		<20	<20			<0.63			
2,4-dimethylphenol	18,667	<2.4		<20	<20			<0.54			
4,6-dinitro-o-cresol (4,6-Dinitro-2n	3,733	<12		<39	<40			<0.89			
2,4-dinitrophenol	1,867	<14		<98	<100			<5.0			
2-nitrophenol	n/a	<7.3		<20	<20			<3.6			
4-nitrophenol	n/a	<5.1		<98	<100			<0.54			
p-chloro-m-cresol (4-Chlor-3-methy	n/a	<4.1		<20	<20			<0.62			
Pentachlorophenol	<18 ^{Note?}	<9.2		<2.9	<3			3.4			
Phenol	180,000	<19		<20	<20			<0.90			
2,4,6-trichlorophenol	130	<8.4		<20	<20			<0.82			
SVOCs - Bases/Neutrals (ug/L)											
Acenaphthene	56,000	<5.1		<9.8	<10			<0.73			
Acenaphthylene	n/a	<5.0		<9.8	<10			<0.62			
Anthracene	280,000	<5.3		<9.8	<10			<0.70			
Benzo(a)anthracene	0.2	<6.3		<1.2	<1.2			<0.76			
Benzo(a)pyrene	0.2	<5.0		<1.5	<1.5			<0.56			
Benzo(b)fluoranthene	n/a	<13		<3.2	<3.3			<1.3			
Benzo(g,h,i)perylene	n/a	<7.4		<9.8	<10			<1.5			
Benzo(k)fluoranthene	1.9	<13		<3.2	<3.3			<1.3			
Chrysene	19	<2.5		<9.8	<10			<0.67			
Dibenzo(a,h)anthracene	1.9	<3.7		<1.9	<1.9			<0.91			
3,3'-dichlorobenzidine	3	<11		<2.0	<2.0			<1.5			
Diethyl phthalate	746,667	<2.3		<20	<20			<1.1			
Dimethyl phthalate	n/a	<3.2		<20	<20			<0.56			
Di-n-butyl phthalate	n/a	<18		<20	<20			<2.7			
2,4-dinitrotoluene	1,867	<2.1		<20	<20			<1.0			
2,6-dinitrotoluene	3,733	<1.8		<20	<20			<1.1			
Di-n-octyl phthalate	373,333	<4.5		<20	<20			<0.76			
1,2-diphenylhydrazine (as azobenz	1.8	<97		<4.9	<20			<1.0			
Fluoranthene	37,333	<5.9		<9.8	<10			<0.81			
Fluorene	37,333	<5.8		<9.8	<10			<0.60			
Hexachlorobenzene	747	<7.6		<20	<20			<1.0			
Hexachlorobutadiene	187	<2.1		<20	<20			<1.1			
Hexachlorocyclopentadiene	11,200	<9.7		<20	<20			<0.71			
Hexachloroethane	850	<2.2		<20	<20			<1.4			
Indeno(1,2,3-cd)pyrene	1.9	<6.9		<1.6	<1.6			<1.2			
Isophorone	186,667	<1.8		<20	<20			<0.82			

Site ID: 4 17th Street Receiving Water: Santa Cruz Land Use: Industrial		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		11/13/11	7/15/12	2/20/13	9/6/13	3/1/14	7/5/14				
SWQS											
SVOCs - Bases/Neutrals (ug/L) continued											
Naphthalene	18,667	<5.6		<9.8	<10			<0.78			
Nitrobenzene	467	<3.0		<20	<20			<1.1			
N-nitrosodimethylamine	0.03	<1.7		<3.2	<3.2			<2.3			
N-nitrosodi-n-propylamine	88,667	<2.4		<20	<20			<1.1			
N-nitrosodiphenylamine	n/a	<7.2		<20	<20			<0.89			
Phenanthrene	n/a	<4.8		<9.8	<10			<0.63			
Pyrene	28,000	<5.8		<9.8	<10			<0.57			
1,2,4-trichlorobenzene	9,333	<1.7		<20	<20			<0.96			
Pesticides (ug/L)											
Aldrin	<0.003 ^{Note8}	<0.0098		<0.099	<0.099			<0.016			
Alpha-BHC	n/a	<0.020		<0.099	<0.099			<0.0099			
Beta-BHC	n/a	<0.020		<0.099	<0.099			<0.017			
Gamma-BHC	n/a	<0.0098		<0.099	<0.099			<0.023			
Delta-BHC	n/a	<0.020		<0.099	<0.099			<0.012			
Chlordane (alpha, gamma)	3.2	<0.0076		<0.099	<0.099			<0.0077			
4,4'DDT	n/a	<0.0029		<0.099	<0.099			<0.014			
4,4'DDE	n/a	<0.0068		<0.099	<0.099			<0.0099			
4,4'DDD	n/a	<0.0097		<0.099	<0.099			<0.0099			
Dieldrin	<0.003 ^{Note8}	<0.0049		<0.099	<0.099			<0.0083			
Alpha-endosulfan (Endosulfan I)	n/a	<0.0098		<0.099	<0.099			<0.0090			
Beta-endosulfan (Endosulfan II)	n/a	<0.029		<0.099	<0.099			<0.0061			
Endosulfan sulfate	3	<0.088		<0.099	<0.099			<0.059			
Endrin	0.004	<0.0059		<0.099	<0.099			<0.011			
Endrin aldehyde	0.7	<0.0049		<0.099	<0.099			<0.0089			
Heptachlor	0.9	<0.020		<0.099	<0.099			<0.0082			
Heptachlor epoxide	0.9	<0.020		<0.099	<0.099			<0.013			
PCB-1016 (Aroclor 1016)	n/a	<0.090		<1.0	<1.0			<0.99			
PCB-1221 (Aroclor 1221)	n/a	<0.98		<1.0	<1.0			<0.99			
PCB-1232 (Aroclor 1232)	n/a	<0.98		<1.0	<1.0			<0.99			
PCB-1242 (Aroclor 1242)	n/a	<0.98		<1.0	<1.0			<0.99			
PCB-1248 (Aroclor 1248)	n/a	<0.98		<1.0	<1.0			<0.99			
PCB-1254 (Aroclor 1254)	n/a	<0.98		<1.0	<1.0			<0.61			
PCB-1260 (Aroclor 1260)	n/a	<0.060		<1.0	<1.0			<0.92			
Toxaphene	0.005	<0.98		<0.99	<0.99			<0.99			

V. Sample Site 5

Site ID: 5 Limberlost/1 rst Receiving Water: Rillito Wash Land Use: Mixed		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		2/14/12	7/10/12	1/26/13		12/20/13	7/3/14	12/4/14			
Monitoring Parameters	SWQS										
Conventional Parameters											
Flow	n/a	1.07	10.19	6.52		4.2	3.34	7.75			
pH	6.5 - 9	7.75	8.25	6.5		7.67	7	6			
Temperature	n/a	53	85	66		53	82	55*			
Hardness	<400	100	92	28		30	130	34			
TDS (mg/L)	n/a	300	120	49		83	330	27			
TSS (mg/L)	n/a	170	500	160		92	260	110			
BOD (mg/L)	n/a	100	27	17		14	21	31			
COD (mg/L)	n/a	470	260	130		120	540	120			
Inorganics											
Cyanide, total (ug/L)	84	<100	<100	<100		<38	53	<82			
Nutrients (mg/L)											
Nitrate + Nitrite as N	n/a	2	1.1	<0.10		1.1	1.8	0.79			
Ammonia as N	n/a	3.7	1.1	<0.50		1.5	3.3	<0.50			
Total Kjeldahl Nitrogen (TKN)	n/a	8.8	19	0.97		2.6	13	2.1			
Total Phosphorus	n/a	0.69	0.9	0.55		0.32	1.1	0.48			
Total Orthophosphate	n/a	0.5	0.16	<0.5		<0.50	<0.22	<0.50			
Microbiological (MPN)											
Escherichia coli (E. coli)	575	93	>2400	>2400		210	580	>2400			
Total Metals (ug/L)											
Antimony	747	<0.2	2.2	0.99		1.3	4	2.1			
Arsenic	200	<40	7.3	<40		<4.0	8.4	6.9			
Barium	98,000	130	180	<50		60	150	70			
Beryllium	1,867	<2.0	<2.0	<2.0		<0.17	<0.93	<0.93			
Cadmium	<3 ^{Note 1}	<2.0	<2.0	<2.0		<0.16	<0.82	<0.82			
Chromium	1,000	<30	12	<30		<0.35	8.1	3.4			
Copper	<3 ^{Note 2}	99	97	22		33	130	38			
Lead	<17 ^{Note 3}	<0.04	40	12		7.4	20	12			
Mercury	5	<1.0	<1.0	0.04		<0.049	0.056	0.12			
Nickel	<882 ^{Note 4}	<50	13	<50		<4.1	7.4	6.0			
Selenium	33	<0.04	0.36	0.36		0.21	1	0.24			
Silver	<0.14 ^{Note 5}	<10	<10	0.013		0.11	<0.029	0.15			
Thallium	75	<0.05	0.04	<0.5		0.048	<0.013	0.10			
Zinc	<235 ^{Note 6}	720	420	210		260	1000	240			

*temperature was estimated

Site ID: 5 Limberlost/1 rst Receiving Water: Rillito Wash Land Use: Mixed		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		2/14/12	7/10/12	1/26/13		12/20/13	7/3/14	12/4/14			
SWQS											
Organic Toxic Pollutants (mg/L)											
Total Petroleum Hydrocarbons	n/a	8.9	<5.00	<5.00		<5.00	<5.00	<5.00			
Total Oil and Grease	n/a	10.6	13	6.2		7	5.6	<5.00			
VOCs, Semi-VOCs, and Pesticides (ug/L)											
Acrolein	467	<50		<50				<10			
Acrylonitrile	37,333	<50		<50				<10			
Benzene	3,733	<10		<10				<2.0			
Bromoform	18,667	<10		<10				<2.0			
Carbon tetrachloride	1,307	<10		<10				<2.0			
Chlorobenzene	18,667	<10		<10				<2.0			
Chlorodibromomethane	n/a	<10		<10				<2.0			
Chloroethane	n/a	<25		<25				<5.0			
2-chloroethylvinyl ether	n/a	<50		<50				<10			
Chloroform	9,333	<10		<10				<2.0			
Dichlorobromomethane	n/a	<10		<10				<2.0			
1,2-dichlorobenzene	5,900	<10		<10				<2.0			
1,3-dichlorobenzene	n/a	<10		<10				<2.0			
1,4-dichlorobenzene	6,500	<10		<10				<2.0			
1,1-dichloroethane	n/a	<10		<10				<2.0			
1,2-dichloroethane	186,667	<10		<10				<2.0			
1,1-dichloroethylene	46,667	<10		<10				<2.0			
1,2-dichloropropane	84,000	<10		<10				<2.0			
1,3-dichloropropylene	n/a	<10		<10				<4.0			
Ethylbenzene	93,333	<10		<10				<2.0			
Methyl bromide (Bromomethane)	n/a	<10		<10				<2.0			
Methyl chloride (Chloromethane)	n/a	<25		<25				<5.0			
Methylene chloride	n/a	<50		<50				<10			
1,1,2,2-tetrachloroethane	93,333	<10		<10				<2.0			
Tetrachloroethylene	9,333	<10		<10				<2.0			
Toluene	373,333	<10		<10				<2.0			
1,2-trans-dichloroethylene	n/a	<10		<10				<2.0			
1,1,1-trichloroethane	186,666,667	<10		<10				<2.0			
1,1,2-trichloroethane	3,733	<10		<10				<2.0			
Trichloroethylene	280	<10		<10				<2.0			
Trimethylbenzene	n/a			<10				<4.0			
Vinyl chloride (chloroethylene)	2,800	<10		<10				<2.0			
Xylene	186,667	<30		<30				<6.0			

Site ID: 5 Limberlost/1 rst Receiving Water: Rillito Wash Land Use: Mixed		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		2/14/12	7/10/12	1/26/13		12/20/13	7/3/14	12/4/14			
SWQS											
SVOCs - Acid Extractables (ug/L)											
2-chlorophenol	4,667	<9.9		<10				<9.9			
2,4-dichlorophenol	2,800	<9.9		<10				<9.9			
2,4-dimethylphenol	18,667	<9.9		<10				<9.9			
4,6-dinitro-o-cresol (4,6-Dinitro-2m	3,733	<9.9		<20				<20			
2,4-dinitrophenol	1,867	<49		<50				<49			
2-nitrophenol	n/a	<9.9		<10				<9.9			
4-nitrophenol	n/a	<49		<50				<49			
p-chloro-m-cresol (4-Chlor-3-methy	n/a	<9.9		<10				<9.9			
Pentachlorophenol	<18 ^{Note7}	<30		<30				3.4			
Phenol	180,000	<9.9		<10				<9.9			
2,4,6-trichlorophenol	130	<9.9		<10				<9.9			
SVOCs - Bases/Neutrals (ug/L)											
Acenaphthene	56,000	<4.9		<5.0				<4.9			
Acenaphthylene	n/a	<4.9		<5.0				<4.9			
Anthracene	280,000	<4.9		<5.0				<4.9			
Benzo(a)anthracene	0.2	<0.64		<0.61				<0.75			
Benzo(a)pyrene	0.2	<4.9		<0.76				<0.55			
Benzo(b)fluoranthene	n/a	<1.3		<1.6				<1.3			
Benzo(g,h,i)perylene	n/a	<4.9		<5.0				<4.9			
Benzo(k)fluoranthene	1.9	<1.3		<1.6				<1.3			
Chrysene	19	<4.9		<5.0				<4.9			
Dibenzo(a,h)anthracene	1.9	<0.37		<0.95				<4.9			
3,3'-dichlorobenzidine	3	<1.1		<1.0				<1.5			
Diethyl phthalate	746,667	<9.9		<10				<9.9			
Dimethyl phthalate	n/a	<9.9		<10				<9.9			
Di-n-butyl phthalate	n/a	<9.9		<10				12			
2,4-dinitrotoluene	1,867	<9.9		<10				<9.9			
2,6-dinitrotoluene	3,733	<9.9		<10				<9.9			
Di-n-octyl phthalate	373,333	<9.9		<10				<9.9			
1,2-diphenylhydrazine (as azobenz	1.8	<9.9		<10				<9.9			
Fluoranthene	37,333	<4.9		<5.0				<4.9			
Fluorene	37,333	<4.9		<5.0				<4.9			
Hexachlorobenzene	747	<9.9		<10				<9.9			
Hexachlorobutadiene	187	<9.9		<10				<9.9			
Hexachlorocyclopentadiene	11,200	<9.9		<10				<9.9			
Hexachloroethane	850	<9.9		<10				<9.9			
Indeno(1,2,3-cd)pyrene	1.9	<0.7		<0.82				<1.2			
Isophorone	186,667	<9.9		<10				<9.9			

Site ID: 5 Limberlost/1 rst Receiving Water: Rillito Wash Land Use: Mixed		Monitoring Season Summer: June 1 - October 31, Winter: November 1 - May 31									
		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Sampling Date(s):		2/14/12	7/10/12	1/26/13		12/20/13	7/3/14	12/4/14			
SWQS											
SVOCs - Bases/Neutrals (ug/L) continued											
Naphthalene	18,667	<4.9		<5.0				<4.9			
Nitrobenzene	467	<9.9		<10				<9.9			
N-nitrosodimethylamine	0.03	<0.18		<1.6				<2.2			
N-nitrosodi-n-propylamine	88,667	<9.9		<10				<9.9			
N-nitrosodiphenylamine	n/a	<9.9		<10				<9.9			
Phenanthrene	n/a	<4.9		<5.0				<4.9			
Pyrene	28,000	<4.9		<5.0				<4.9			
1,2,4-trichlorobenzene	9,333	<9.9		<10				<9.9			
Pesticides (ug/L)											
Aldrin	<0.003 ^{Note8}	<0.099		<0.10				<0.10			
Alpha-BHC	n/a	<0.099		<0.10				<0.10			
Beta-BHC	n/a	<0.099		<0.10				<0.10			
Gamma-BHC	n/a	<0.099		<0.10				<0.10			
Delta-BHC	n/a	<0.099		<0.10				<0.10			
Chlordane (alpha, gamma)	3.2	<0.099		<0.10				<0.20			
4,4'-DDT	n/a	<0.099		<0.10				<0.10			
4,4'-DDE	n/a	<0.099		<0.10				<0.10			
4,4'-DDD	n/a	<0.099		<0.10				<0.10			
Dieldrin	<0.003 ^{Note8}	<0.099		<0.10				<0.10			
Alpha-endosulfan (Endosulfan I)	n/a	<0.099		<0.10				<0.10			
Beta-endosulfan (Endosulfan II)	n/a	<0.099		<0.10				<0.10			
Endosulfan sulfate	3	<0.099		<0.10				<0.10			
Endrin	0.004	<0.099		<0.10				<0.10			
Endrin aldehyde	0.7	<0.099		<0.10				<0.10			
Heptachlor	0.9	<0.099		<0.10				<0.10			
Heptachlor epoxide	0.9	<0.099		<0.10				<0.10			
PCB-1016 (Aroclor 1016)	n/a	<0.99		<1.0				<0.98			
PCB-1221 (Aroclor 1221)	n/a	<0.99		<1.0				<0.98			
PCB-1232 (Aroclor 1232)	n/a	<0.99		<1.0				<0.98			
PCB-1242 (Aroclor 1242)	n/a	<0.99		<1.0				<0.98			
PCB-1248 (Aroclor 1248)	n/a	<0.99		<1.0				<0.98			
PCB-1254 (Aroclor 1254)	n/a	<0.99		<1.0				<0.98			
PCB-1260 (Aroclor 1260)	n/a	<0.99		<1.0				<0.98			
Toxaphene	0.005	<0.99		<1.0				<1.0			

VI. Range of Hardness and pH Dependent SWQS Constituents at all Sites

This table was generated to assist in the review of constituents that vary with hardness or pH, according to the Surface Water Quality Standards (SWQS).

Notes from Samples at all Sites for Constituents Standards that vary based on Hardness or pH

SWQS for constituents (ug/L) for Hardness Range (mg/L) of:	Min	Max	SWQS Table
Cadmium (Note 1)	2.42	85.49	6
Copper (Note 2)	2.66	83.85	12
Lead (Note 3)	10.35	577.51	15
Nickel (Note 5)	593	13,151	18
Silver (Note 6)	0.06	33.42	19
Zinc (Note 7)	158	3523	21

Hardness Range of All Samples	
Min	Max
10	390

pH Range of All Samples	
Min	Max
5	8.61

	Min	Max	SWQS Table
For pH Range of	5.0	8.61	
Pentachlorophenol (Note 8)	4.925	183.534	24

SWQS are for dissolved
Assume 1:1 ratio

Sum	
Aldrin + Dieldrin (Note 9)	< 0.003 ug/L

SWQS A.A.C. Title 18, Ch. 11
Surface Water Quality Standards

The Surface Water Quality Standards (SWQS) for cadmium, copper, lead, nickel, silver and zinc, are all based on hardness of the stormwater sample. Pentachlorophenol SWQS is based on pH. To understand how to read this table, look at the heading that shows "Min" and "Max". These represent the range of hardness at all of the sites that is from 10 to 390 mg/L. These hardness values are used to find the minimum and maximum range of each constituent (cadmium, copper, lead, nickel, silver and zinc) in the SWQS. For example, Table 6 of the SWQS shows the standard for cadmium at a hardness of 10 as 2.42 µg/L. Similarly, the standard for cadmium at a hardness of 390 mg/L is 85.49 µg/L. Each of the constituents is found in the SWQS. Copper is tabulated in table 12, lead is tabulated in table 15 etc. Further discussions are in Part 10.

PART 10 ASSESSMENT OF MONITORING DATA

I. Stormwater Quality

This report is the fourth of a five year permit. The sampling results are similar to those submitted last year and in the last permitting term. Sampled stormwater exhibited typical constituent concentrations for stormwater runoff from an arid or semi-arid southwestern city. This fiscal year's samples were well within the historical range of sampling data collected in earlier permit reporting periods. Sample Site 4's value for copper concentration increased during this sampling season (discussed in Part 10. III.)

II. Water Quality Standards (WQS)

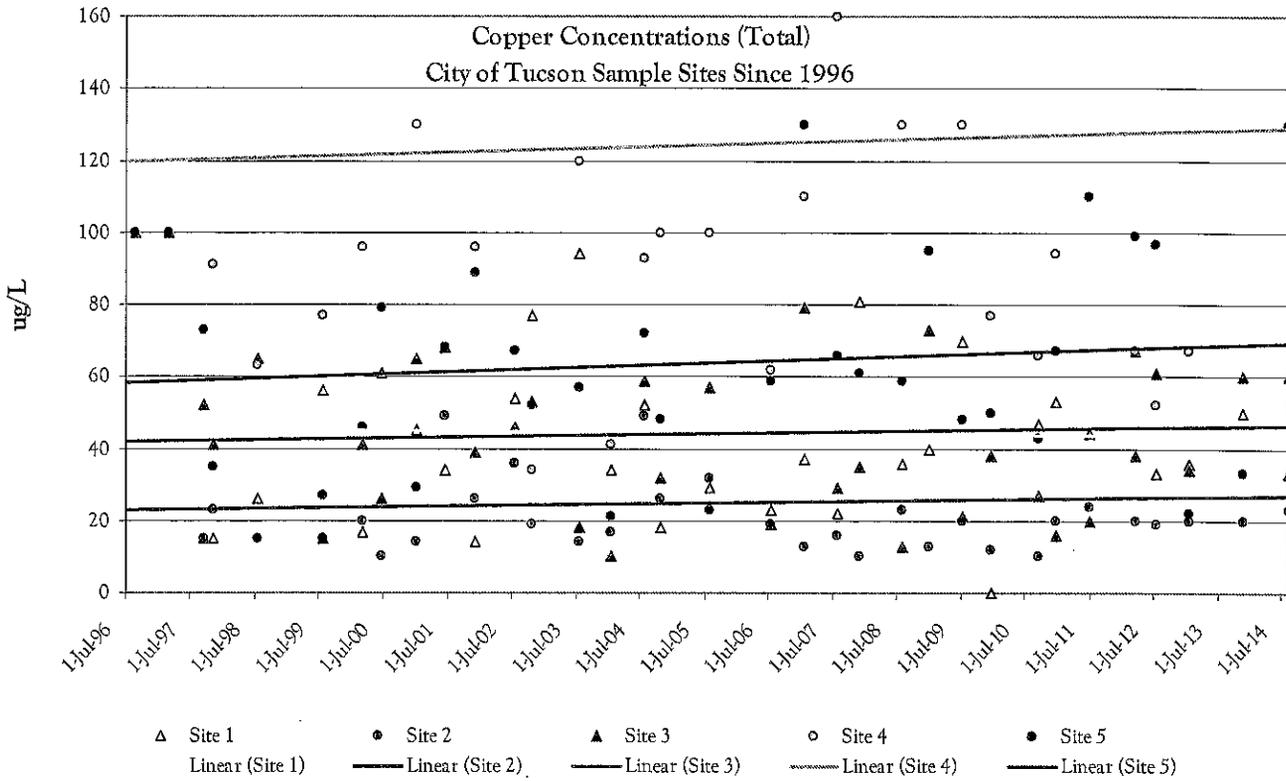
The surface water quality standards are listed in the tables found in Part 9 and Part 10 III (below). All sites were well below the surface water quality standards excluding those listed and discussed in Part 10. III.

III. Exceeding Water Quality Standards (WQS)

The concentration of copper continues to exceed the SWQS in all sample sites. A review was performed and updated to compare the results since 1996 (see below). The results that were below the detection limit of the laboratory equipment (less than) were reported for this report as the value. For example, <0.1 was reported as 0.1 rather than 0. Therefore the actual value is lower than what is graphed below. There continues to be a lot of scatter in the data, yet trend lines indicate the copper concentration is declining at most of the sites or the laboratory detection/reporting limits are getting lower. It appears from the data since 1996 that the copper concentrations, on the most part, have not changed. However, the trend lines for Sites 4 and 5 are increasing. Again, the Stormwater Inspectors combed through all the sites trying to determine the cause of the copper in the stormwater. In the watershed of Site 4, the Stormwater Inspectors found a shop that winds alternators (with copper wire) that had poor management practices. Our Industrial Stormwater Inspector did a thorough inspection of the site, identified areas where they needed improvement and provided them with assistance. During a follow-up inspection the Industrial Stormwater Inspector noted that the site was very clean and all of his concerns had been addressed. We are convinced that the cause of higher copper values resulted from this site and should be reflected in future sample results.

The Stormwater Team continues to believe that the higher level of copper at the sites is likely from native background in soils and landscape material and possibly brake dust from automobiles. However, to test the hypotheses that copper may be attributed to brake dust, Site 4's watershed was swept with a street sweeper on August 17, 2013 in effort to clean the copper before it was sample on September 6, 2013. The sample results were almost twice as high as the previous sample! We believe the higher value was due to the facility discussed in the previous paragraph.

The cause of the *E-coli* is suspected to be from birds (aves), cat (feline) and dog/coyote (canine) droppings.



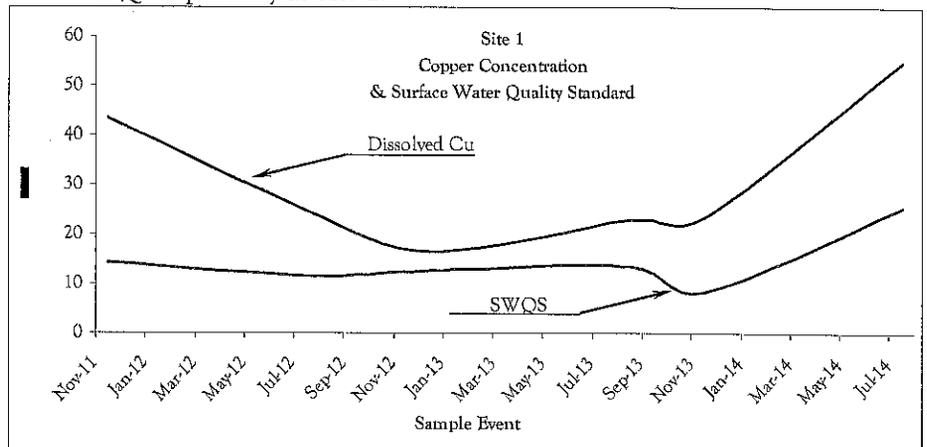
In a number of samples, the laboratory could not measure as low as the SWQS's for a number of constituents. They were: copper, silver, pentachlorophenol, cyanide, benzo(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, 1,2-diphenylhydrazine, n-nitrosodimethylamine, aldrin, dieldrin, endrin, and toxaphene.

A. SUMMARY OF CONSTITUENTS SWQS THAT VARIES WITH HARDNESS OR PH AT SITE 1.

Site ID: 1 Grant/Wilson		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	
Sample Date:		11/11	7/20/12	12/19/12	8/27/13	11/22/13	7/31/14	12/13/14	
Receiving Water: Killito		Hardness	60	48	53	56	34	110	30
Cadmium	(Note 1) SWQS: Table 6 (ug/L) Dissolved	13.87	11.17	12.30	12.97	7.98	25.02	7.06	
	Value (ug/L) Total	0.31	0.29	2	0.16	2	<0.82	<0.82	
	Assume 1:1 Ratio Total to Dissolved Exceed Cadmium Standard?	0.155	0.145	1	0.08	1	0.41	0.41	
Copper	(Note 2) SWQS: Table 12 (ug/L) Dissolved	14.37	11.65	12.79	13.47	8.42	25.45	7.48	
	Value (ug/L) Total	87	50	33	46	47	110	22	
	Assume 1:1 Ratio Total to Dissolved Exceed Copper Standard?	43.5	25	16.5	23	23.5	55	11	
Lead	(Note 3) SWQS: Table 15 (ug/L) Dissolved	77.83	60.78	67.85	71.11	41.38	151.18	35.96	
	Value (ug/L) Total	21	8.6	14	24	21	20	10	
	Assume 1:1 Ratio Total to Dissolved Exceed Lead Standard?	10.5	4.3	7	12	10.5	10	5	
Nickel	(Note 4) SWQS: Table 18 (ug/L) Dissolved	2699	2235	2430	2546	1669	4508	1502	
	Value (ug/L) Total	1.1	9.6	50	4.1	50	16	1.9	
	Assume 1:1 Ratio Total to Dissolved Exceed Nickel Standard?	0.55	4.8	25	2.05	25	8	0.95	
Silver	(Note 5) SWQS: Table 19 (ug/L) Dissolved	1.34	0.91	1.08	1.19	0.5	3.79	0.41	
	Value (ug/L) Total	0.46	0.87	0.067	0.23	0.23	<0.029	0.2	
	Assume 1:1 Ratio Total to Dissolved Exceed Silver Standard?	0.23	0.435	0.0335	0.115	0.115	0.0145	0.1	
Zinc	(Note 6) SWQS: Table 21 (ug/L) Dissolved	721	597	629	680	446	1206	401	
	Value (ug/L) Total	230	140	100	150	170	310	88	
	Assume 1:1 Ratio Total to Dissolved Exceed Zinc Standard?	1.15	70	50	75	85	155	44	
pH		7.07		8.55	8.11			5	
PCP	(Note 7) SWQS: Table 24 (ug/L) Dissolved	40		166	111		4925		
	Value (ug/L) Total	29		29	1.5		3.6		
	Exceed Pentachlorophenol Standard?	No		No	No		Yes		
(Note 8) SWQS Aldrin + Dieldrin < 0.003 ug/L	Aldrin Value (ug/L)	<0.097		<0.098	<0.10		<0.016		
	Dieldrin Value (ug/L)	<0.097		<0.098	<0.10		<0.0084		
	Exceed Aldrin/Dieldrin Standard?	Unk		Unk	Unk		Unk		
E.coli (MPN)		>2400	2000	>2400	>2400	>2400	2400	>2400	
Exceed E.coli Standard (>75)		Yes	Yes	Yes	Yes	Yes	Yes	Yes	

This table shows copper and *e. coli* exceed SWQS repeatedly at Site 1.

The concentration of copper increased at Site 1 (blue line). We suspect the increase may be due to collecting samples after several months of dry weather. Site 1 has a small watershed in a residential area. The source of copper is unknown and could not be determined and is suspected to be native to soils. SWQS is the red line.

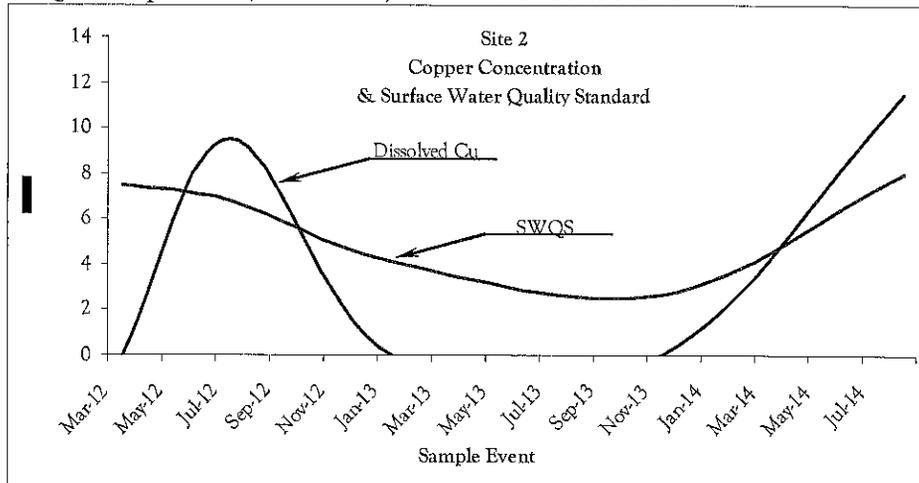


B. SUMMARY OF CONSTITUENTS SWQS THAT VARIES WITH HARDNESS OR PH AT SITE 2.

Site ID: 2 Greenlee Receiving Water: Killito		Winter	Summer	Winter	Summer	Winter	Summer	Winter
		2011-12	2012	2012-13	2013	2013-14	2014	2014-15
Sample Date: Hardness		3/18/12	7/15/12	1/26/13		1/22/13	8/12/14	12/4/14
		30	27	16		10	32	11
Cadmium	(Note 1) SWQS: Table 6 (ug/L) Dissolved	7.06	6.37	3.83		2.42	7.52	2.65
	Value (ug/L) Total	2	0.4	2		2	<2.0	<0.82
	Assume 1:1 Ratio Total to Dissolved	1	0.2	1		1	<1.0	0.41
	Exceed Cadmium Standard?	No	No	No		No	No	No
Copper	(Note 2) SWQS: Table 12 (ug/L) Dissolved	7.48	6.77	4.14		2.66	7.95	2.91
	Value (ug/L) Total	<20	19	<20		<20	23	<20
	Assume 1:1 Ratio Total to Dissolved	<10	9.5	<10		<10	11.5	<10
	Exceed Copper Standard?	Unk	Yes	Unk		Unk	Yes	Unk
Lead	(Note 3) SWQS: Table 15 (ug/L) Dissolved	15.96	31.95	17.60		10.35	18.66	11.54
	Value (ug/L) Total	0.96	2.7	1.4		0.49	3.8	0.5
	Assume 1:1 Ratio Total to Dissolved	0.48	1.35	0.7		0.245	1.9	0.25
	Exceed Lead Standard?	No	No	No		No	No	No
Nickel	(Note 4) SWQS: Table 18 (ug/L) Dissolved	1502	1374	882		643	1586	643
	Value (ug/L) Total	50	3	50		50	2.4	2.2
	Assume 1:1 Ratio Total to Dissolved	25	1.5	25		25	1.2	1.1
	Exceed Nickel Standard?	No	No	No		No	No	No
Silver	(Note 5) SWQS: Table 19 (ug/L) Dissolved	0.41	0.34	0.14		0.06	0.45	0.07
	Value (ug/L) Total	<10	0.99	0.014		0.007	<0.029	0.049
	Assume 1:1 Ratio Total to Dissolved	<5	0.495	0.007		0.0035	<0.015	0.0245
	Exceed Silver Standard?	Unk	Yes	No		No	No	No
Zinc	(Note 6) SWQS: Table 21 (ug/L) Dissolved	401	367	235		158	423	171
	Value (ug/L) Total	56	78	40		40	76	40
	Assume 1:1 Ratio Total to Dissolved	28	39	20		20	38	20
	Exceed Zinc Standard?	No	No	No		No	No	No
pH		7.97		6.3				6.5
PCP	(Note 7) SWQS: Table 24 (ug/L) Dissolved	100		18				22.24
	Value (ug/L) Total	29		<30				<31
	Exceed Pentachlorophenol Standard?	No		Unk				Unk
Aldrin Value (ug/L)		<0.097		<0.099				<0.10
Dieldrin Value (ug/L)		<0.097		<0.099				<0.10
(Note 8) SWQS Aldrin + Dieldrin < 0.003 ug/L		<0.194		<0.198				<0.20
Exceed Aldrin/Dieldrin Standard?		Unk		Unk				Unk
E.coli (MPN)		87	>2400	770		54	32	2400
Exceed E.coli Standard (375)		No	Yes	Yes		No	No	Yes

This table shows copper exceeding SWQS a couple times, silver once, and e. coli twice at Site 2.

The concentrations of copper collected at Site 2 (blue line) are variable. The minimum detection of samples from the Winter of 2011-12, 2012-13, and 2013-14 were above the Surface Water Quality Standard so it is not known if they exceeded the standard. The sources of the metal could not be determined. The watershed from Site 2 is multi-family residential. SWQS is the red line.

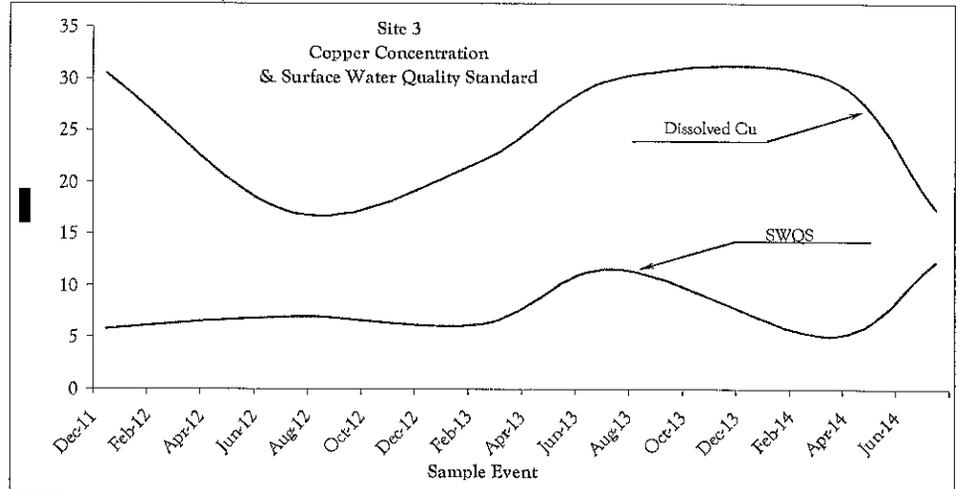


C. SUMMARY OF CONSTITUENTS SWQS THAT VARIES WITH HARDNESS OR PH AT SITE 3.

Site ID: 3 Randolph/Broadway		Winter	Summer	Winter	Summer	Winter	Summer	Winter		
		2011-12	2012	2012-13	2013	2013-14	2014	2014-15		
Sample Date:		12/12/11	11/20/12	2/20/13	11/15/13	3/1/14	11/16/14	12/4/14		
Receiving Water: Santa Cruz		Hardness		23	28	25	48	20	51	21
Cadmium	(Note 1) SWQS: Table 6 (ug/L) Dissolved	5.45	6.60	5.91	11.17	4.76	11.84	4.99		
	Value (ug/L) Total	0.31	0.44	2	2	2	0.82	<0.82		
	Assume 1:1 Ratio Total to Dissolved	0.155	0.22	1	1	1	0.41	0.41		
	Exceed Cadmium Standard?	No	No	No	No	No	No	No		
Copper	(Note 2) SWQS: Table 12 (ug/L) Dissolved	5.82	7.01	6.30	11.65	5.11	12.33	5.35		
	Value (ug/L) Total	61	34	44	60	60	35	37		
	Assume 1:1 Ratio Total to Dissolved	30.5	17	22	30	30	17.5	18.5		
	Exceed Copper Standard?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Lead	(Note 3) SWQS: Table 15 (ug/L) Dissolved	26.67	33.28	29.3	60.78	22.77	65.01	24.07		
	Value (ug/L) Total	19	7.9	12	16	20	14	6.4		
	Assume 1:1 Ratio Total to Dissolved	9.5	3.95	6	8	10	7	3.2		
	Exceed Lead Standard?	No	No	No	No	No	No	No		
Nickel	(Note 4) SWQS: Table 18 (ug/L) Dissolved	1.99	14.16	1.287	2.35	10.66	2.52	1.10		
	Value (ug/L) Total	1.1	4.8	50	50	50	4.3	3.5		
	Assume 1:1 Ratio Total to Dissolved	0.55	2.4	25	25	25	2.15	1.75		
	Exceed Nickel Standard?	No	No	No	No	No	No	No		
Silver	(Note 5) SWQS: Table 19 (ug/L) Dissolved	0.26	0.36	0.30	0.91	0.2	1.01	0.22		
	Value (ug/L) Total	0.46	0.95	0.0054	0.086	0.21	0.12	0.13		
	Assume 1:1 Ratio Total to Dissolved	0.23	0.475	0.0027	0.043	0.105	0.06	0.065		
	Exceed Silver Standard?	No	Yes	No	No	No	No	No		
Zinc	(Note 6) SWQS: Table 21 (ug/L) Dissolved	320	378	344	597	284	629	296		
	Value (ug/L) Total	240	150	190	250	190	120	160		
	Assume 1:1 Ratio Total to Dissolved	120	75	95	125	95	60	80		
	Exceed Zinc Standard?	No	No	No	No	No	No	No		
pH		6.74		7.5	5			6.5	0	
PCP	(Note 7) SWQS: Table 24 (ug/L) Dissolved	27		61	5			22.24		
	Value (ug/L) Total	9.2		<3	<1.5			3.4		
Exceed Pentachlorophenol Standard?		No		No	No			No		
Aldrin Value (ug/L)		<0.0098		<0.10		<0.10		<0.10		
Dieldrin Value (ug/L)		<0.0049		<0.10		<0.10		<0.10		
(Note 8) SWQS Aldrin + Dieldrin < 0.003 ug/L		<0.0147		<0.20		0.000		0.000		
Exceed Aldrin/Dieldrin Standard?		Unk		Unk		Unk		No		
E.coli (MPN)		770	370	580	130	170	1600	610		
Exceed E.coli Standard (575)		Yes	No	Yes	No	No	Yes	Yes		

This table shows copper exceeding SWQS repeatedly, silver once, and *e. coli* twice at Site 3.

The concentration of copper collected at Site 3 (blue line) declined. However, it is still above the Surface Water Quality Standard (red line). Site 3's stormwater flows from a small shopping mall. The site is impervious; there are not any industrial or construction activities that are more likely sources of the metal.

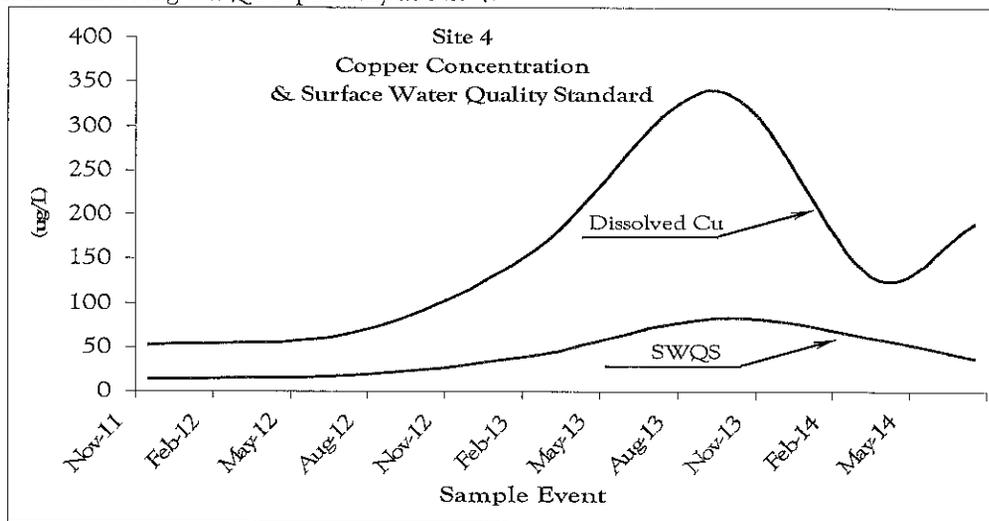


D. SUMMARY OF CONSTITUENTS SWQS THAT VARIES WITH HARDNESS OR PH AT SITE 4.

Site ID: 4 17th Street		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	
Sample Date:		1/13/11	7/15/12	2/20/13	9/6/13	3/7/14	7/5/14	12/15/14	
Receiving Water: Santa Cruz		Hardness	60	76	180	390	280	170	42
Cadmium	(Note 1) SWQS: Table 6 (ug/L) Dissolved	13.87	17.46	40.37	85.49	61.99	38.19	9.8	
	Value (ug/L) Total	0.31	0.5	2	0.16	0.16	<0.82	<0.82	
	Assume 1:1 Ratio Total to Dissolved	0.155	0.25	1	0.08	0.08	0.41	0.41	
	Exceed Cadmium Standard?	No	No	No	No	No	No	No	
Copper	(Note 2) SWQS: Table 12 (ug/L) Dissolved	14.37	17.96	40.47	83.85	61.37	38.35	10.27	
	Value (ug/L) Total	52	67	160	340	130	190	24	
	Assume 1:1 Ratio Total to Dissolved	26	33.5	80	170	65	95	12	
	Exceed Copper Standard?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Lead	(Note 3) SWQS: Table 15 (ug/L) Dissolved	77.83	100.97	256.85	577.51	409.62	241.64	57.39	
	Value (ug/L) Total	16	19	42	80	51	20	7.6	
	Assume 1:1 Ratio Total to Dissolved	8	9.5	21	40	25.5	10	3.8	
	Exceed Lead Standard?	No	No	No	No	No	No	No	
Nickel	(Note 4) SWQS: Table 18 (ug/L) Dissolved	2699	3797	6837	13151	9936	6514	1996	
	Value (ug/L) Total	1.1	6	50	4.1	4.1	6.3	2.6	
	Assume 1:1 Ratio Total to Dissolved	0.55	3	25	2.05	2.05	3.15	1.3	
	Exceed Nickel Standard?	No	No	No	No	No	No	No	
Silver	(Note 5) SWQS: Table 19 (ug/L) Dissolved	134	201	384	3342	18.9	8.01	0.72	
	Value (ug/L) Total	0.46	0.85	0.24	1	0.51	<0.029	0.19	
	Assume 1:1 Ratio Total to Dissolved	0.23	0.425	0.12	0.5	0.255	0.0145	0.095	
	Exceed Silver Standard?	No	No	No	No	No	No	No	
Zinc	(Note 6) SWQS: Table 21 (ug/L) Dissolved	727	881	1830	3523	2661	1743	536	
	Value (ug/L) Total	190	220	440	800	330	690	110	
	Assume 1:1 Ratio Total to Dissolved	95	110	220	400	165	345	55	
	Exceed Zinc Standard?	No	No	No	No	No	No	No	
pH		7.95		7.7	6			7.03	
PCP	(Note 7) SWQS: Table 24 (ug/L) Dissolved	100		74	13			36.76	
	Value (ug/L) Total	9.2		<2.9	3			3.4	
	Exceed Pentachlorophenol Standard?	No		No	No			No	
	Aldrin Value (ug/L)	<0.0098		<0.099	<0.099			<0.016	
Dieldrin Value (ug/L)	<0.0049		<0.099	<0.099			<0.0083		
(Note 8) SWQS Aldrin + Dieldrin < 0.003 ug/L	<0.0147		<0.198	<0.198			<0.0243		
Exceed Aldrin/Dieldrin Standard?	Unk		Unk	Unk			Unk		
E.coli (MPN)		>2400	>2400	54	>2400	1000	2400	>2400	
Exceed E.coli Standard (> 15)		Yes	Yes	No	Yes	Yes	Yes	Yes	

This table shows copper and e. coli exceeding SWQS repeatedly at Site 4.

Similar to Site 1, the concentration of copper (blue line) collected at Site 4 has increased. Site 4's storm-water flows from an industrial site where the possible source of copper may have originated from a facility with poor BMP's that have been corrected. Further sample results may reveal this to be the case. (Red line is SWQS.)

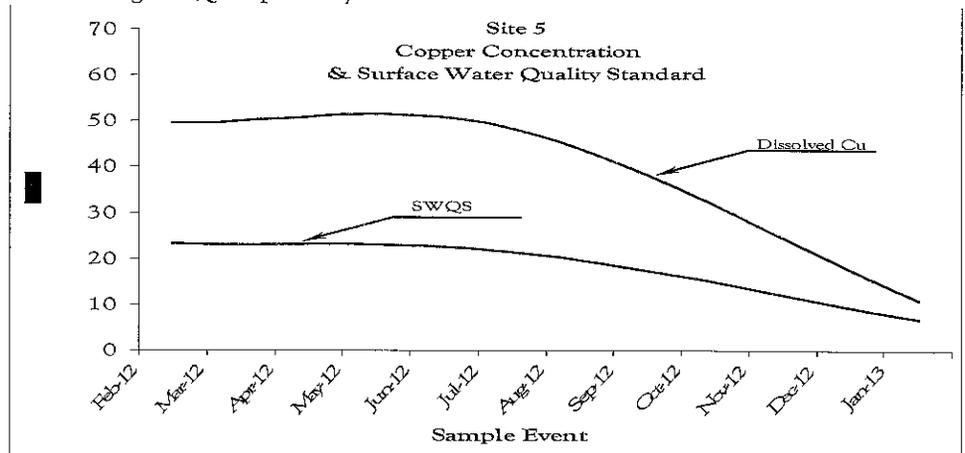


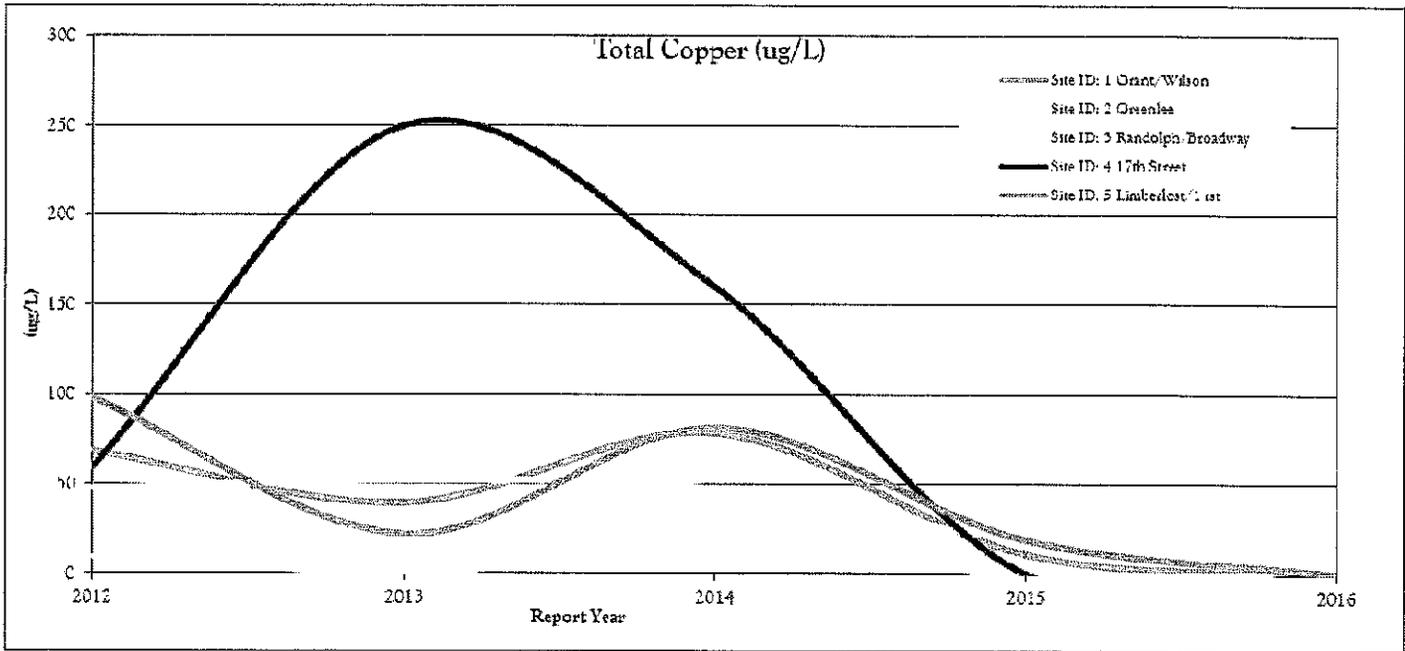
E. SUMMARY OF CONSTITUENTS SWQS THAT VARIES WITH HARDNESS OR PH AT SITE 5.

Site ID: 5 Limberlost/1 rst		Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	
Sample Date:		2/17/12	7/10/12	1/26/13		12/20/13	7/31/14	12/17/14	
Receiving Water: Kilito		Hardness		100	92	28	30	130	34
Cadmium	(Note 1) SWQS: Table 6 (ug/L) Dissolved	27.81	21.03	6.60		7.06	29.43	7.98	
	Value (ug/L) Total	2	2	2		0.16	<0.82	<0.82	
	Assume 1:1 Ratio Total to Dissolved	1	1	1		0.08	0.41	0.41	
	Exceed Cadmium Standard?	No	No	No		No	No	No	
Copper	(Note 2) SWQS: Table 12 (ug/L) Dissolved	23.26	21.50	7.01		7.48	29.78	8.42	
	Value (ug/L) Total	99	97	22		33	130	38	
	Assume 1:1 Ratio Total to Dissolved	49.5	48.5	11		16.5	65	19	
	Exceed Copper Standard?	Yes	Yes	Yes		Yes	Yes	Yes	
Lead	(Note 3) SWQS: Table 15 (ug/L) Dissolved	136.3	124.45	33.28		35.96	181.14	41.38	
	Value (ug/L) Total	0.04	40	12		7.4	20	12	
	Assume 1:1 Ratio Total to Dissolved	0.02	20	6		3.7	10	6	
	Exceed Lead Standard?	No	No	No		No	No	No	
Nickel	(Note 4) SWQS: Table 18 (ug/L) Dissolved	4158	3875	1416		1502	5192	1669	
	Value (ug/L) Total	50	13	50		4.1	7.4	6.0	
	Assume 1:1 Ratio Total to Dissolved	25	6.5	25		2.05	3.7	3.0	
	Exceed Nickel Standard?	No	No	No		No	No	No	
Silver	(Note 5) SWQS: Table 19 (ug/L) Dissolved	3.22	2.79	0.36		0.41	5.05	0.5	
	Value (ug/L) Total	<10	<10	0.013		0.11	<0.029	0.15	
	Assume 1:1 Ratio Total to Dissolved	<5	<5	0.0065		0.055	0.0145	0.075	
	Exceed Silver Standard?	Unk	Unk	No		No	No	No	
Zinc	(Note 6) SWQS: Table 21 (ug/L) Dissolved	1112	1036	378		401	1389	446	
	Value (ug/L) Total	720	420	210		260	1000	240	
	Assume 1:1 Ratio Total to Dissolved	360	210	105		130	500	120	
	Exceed Zinc Standard?	No	No	No		No	No	No	
pH		7.75		6.5				6	
PCP	(Note 7) SWQS: Table 24 (ug/L) Dissolved	100		22				13.456	
	Value (ug/L) Total	30		<30				3.4	
	Exceed Pentachlorophenol Standard?	No		Unk				No	
Aldrin/Dieldrin	Aldrin Value (ug/L)	<0.099		<0.10				<0.10	
	Dieldrin Value (ug/L)	<0.099		<0.10				<0.10	
	(Note 8) SWQS Aldrin + Dieldrin < 0.003 ug/L	<0.198		<0.20				<0.20	
	Exceed Aldrin/Dieldrin Standard?	Unk		Unk				Unk	
E.coli (MPN)		93	>2400	>2400		210	580	>2400	
Exceed E.coli Standard (575)		No	Yes	Yes		No	Yes	Yes	

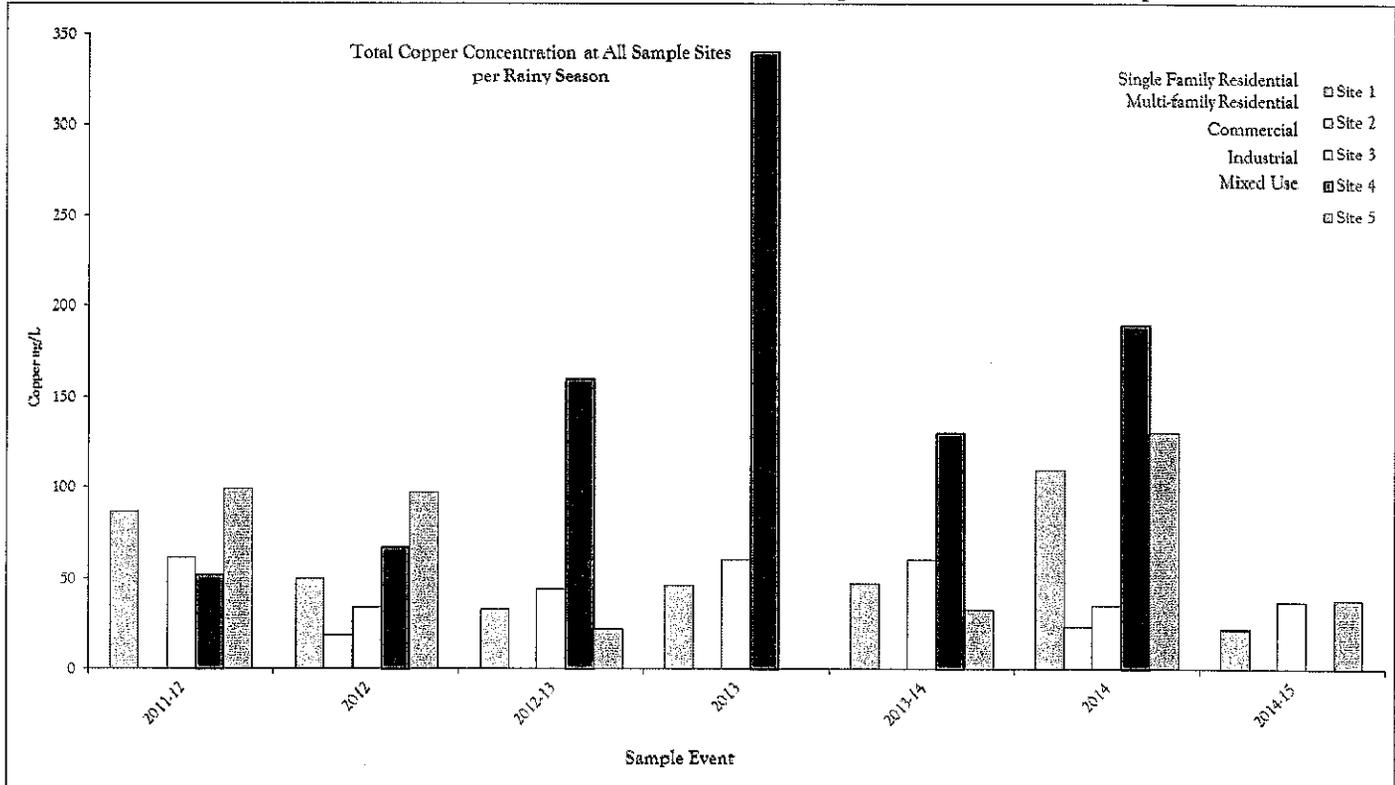
This table shows copper and e. coli exceeding SWQS repeatedly at Site 5.

Similar to Site 3, the concentration of copper (blue line) collected at Site 5 has declined. Site 5's stormwater flows from a mixed use area. The recent values are close to the Surface Water Quality Standard (red line).





This graph clearly shows copper concentration at Site 4 is much higher than the other Sample Sites.



Similarly, this graph shows Site 4's higher copper concentration than the other Sample Sites.

PART 11 ESTIMATES OF ANNUAL POLLUTANT LOADINGS

To estimate the annual pollutant load, rainfall totals are collected at each of the five stations, tabulated monthly, and used to calculate the event mean concentration for constituents monitored under the City's MS4 permit, along with the pollutant loading calculations.

Laboratories report constituent values that were below the detection limit as less than the minimum Practical Quantitation Limit (<PQL) or the Minimum Detection Limit (MDL). These values are reported as zero for calculating purposes.

Runoff volumes were calculated for each drainage area, utilizing the area and impervious fraction developed by Pima County Flood Control District specifically for the Tucson metropolitan area, along with rainfall data collected at each sample site. Runoff volumes are shown in Table 11.3.

Annual pollutant load estimates were developed in accordance with guidance found in the EPA's "Guidance Manual for the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems." The simple method described in this document was followed. This method involves using the event mean concentrations and multiplying by the runoff volumes for each watershed. The following formula was used to determine the annual load of each pollutant for each drainage basin:

$$L = (R)(C)(A)(N)$$
$$V = (R)(A)$$

- L = Pollutant load (tons/year).
- R = Runoff (inches)
- C = Pollutant concentration (mg/L)
- A = Area (acres)
- N = Conversion (1.65×10^3)
- V = Volume of runoff (acre-feet).

$$R = (P)(P_j)(R_v)$$

- P = Rainfall (inches)
- P_j = Fraction of annual rainfall events that produce runoff
- R_v = Runoff coefficient
- I_a = Impervious fraction

$$R_v = 0.05 + 0.9(I_a)$$

P is obtained and averaged from raw data collected from sample sites where P_j is calculated from actual rain events at sample sites that produce flow for the winter and summer seasons. In the last annual report P_j was 0.77 for the summer rainy season and 0.62 for the winter rainy season. It has been updated and averaged over the previous seasons to 0.65 and 0.59 respectfully. Therefore the values in the following tables have changed and are reflected with the updated constant P_j .

Table 11.1
Average Annual Load for the City of Tucson's Monitoring Program 2011 – 2016

mg/L	TDS	TSS	BOD	COD	N	TKN	PO ₄
2012	123	156	42	195	1.1	4.7	0.4
2013	87	261	28	179	0.6	3.0	0.9
2014	166	207	17	292	1.6	6.7	0.7
2015	17	23	10	35	0.1	0.7	0.2
2016	0	0	0	0	0.0	0.0	0.0
S.D.	70	114	16	121	0.7	2.8	0.4

ug/L	Sb	As	Ba	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
2012	1.7	2.0	86	0.0	0.2	3	57	14	0.0	4	0.2	0.4	0.0	244
2013	1.5	0.0	103	0.0	0.0	0	73	21	0.0	0	0.6	0.2	0.0	235
2014	2.2	6.9	106	0.1	0.1	8	76	18	0.1	10	0.5	0.1	0.3	315
2015	0.6	1.8	12	0.0	0.0	1	10	3	0.0	1	0.0	0.1	0.0	49
2016	0.0	0.0	0	0.0	0.0	0	0	0	0.0	0	0.0	0.0	0.0	0
S.D.	1	3	52	0	0	3	36	9	0	4	0	0	0	136

Table 11.2a
Drainage Characteristics

Drainage Basin	Area (sq mi)	Impervious Fraction	Rv no units
	"A"	"I"	
SANTA CRUZ RIVER	142.96	8.72	8.95
RILLITO CREEK	19.73	0.22	4.28
PANTANO WASH	29.06	0.08	2.44
TANQUE VERDE CREEK	10.91	0.16	1.74
SABINO CREEK	0.6	0.43	0.26
Atterbury Wash (into Lakeside Lake)	11.66	0.06	0.10

Table 11.2b
Total Runoff "V" (acre-feet)

	Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Santa Cruz River	5,897	7,479	4,311	3,290	3,940	11,375	5,494	0	0	0
Rillito Creek	1,392	1,766	1,018	777	930	2,685	1,297	0	0	0
Pantano Wash	722	915	528	403	482	1,392	672	0	0	0
Tanque Verde Creek	507	643	371	283	339	979	473	0	0	0
Sabino Creek	24	30	17	612	16	45	22	0	0	0
Total (City Wide)	8,541	10,833	6,244	5,364	5,707	16,476	7,958	0	0	0

The runoff volumes have changed from the previous reports because the runoff coefficient (P_f) was obtained from real data at the sample sites and averaged for each of the rainy seasons.

Table 11.3

Drainage Basin Sizes, Impervious Fraction, and Rv

Drainage Basin	Area (sq mi)	Impervious Fraction	Rv
	"A"	"I"	no units
Santa Cruz River	142.96	8.72	8.95
Silvercroft Wash (DL)	13.44	0.12	0.16
West Branch Santa Cruz River (CG)	10.22	0.08	0.12
Hughes Wash (AC)	8.33	0.42	0.43
El Vado Wash (AG)	2.29	0.36	0.37
Santa Clara Wash (AH)	0.39	0.26	0.28
Valencia Wash (AL)	1.64	0.42	0.43
Airport Wash (AW)	24.17	0.09	0.13
Wyoming Wash (BC)	0.7	0.25	0.28
Irvington Wash (BL)	0.25	0.25	0.28
Rodeo Wash (BR)	8.39	0.21	0.24
Tucson Diversion Channel (BW)	43.53	0.20	0.23
Mission View Wash (CC)	1.62	0.48	0.48
18th Street Wash (CL)	3.59	0.42	0.43
Cushing Street Wash (CR)	0.5	0.57	0.56
Downtown Wash (CT)	0.31	0.85	0.82
Arroyo Chico (CW)	11.17	0.52	0.52
West University Wash (DA)	0.76	0.63	0.62
Bronx Wash (DC)	1.26	0.50	0.50
Grant Road Wash (DD)	0.77	0.69	0.67
Kruerger Wash (DF)	0.38	0.46	0.46
Flowing Wells Wash (DG)	6.47	0.42	0.43
Ruthrauff Wash (EG)	2.78	0.52	0.52
Rillito Creek	19.73	0.22	4.28
Stone Avenue Wash (HG)	0.6	0.61	0.60
First Avenue Wash (GR)	0.5	0.37	0.38
North Mountain Avenue Wash (GQ)	0.62	0.25	0.28
Tucson General Wash (GM)	0.42	0.34	0.36
Christmas Wash (GL)	3.28	0.45	0.46
Alvernon Wash (GG)	3.24	0.54	0.54
Christopher City Wash (GF)	0.21	0.49	0.49
Alamo Wash (GC)	9.81	0.46	0.46
Swan Road Wash (GD)	0.52	0.42	0.43
Creekside Wash (GE)	0.53	0.27	0.29

Drainage Basin	Area (sq mi) "A"	Impervious Fraction "I"	Rv no units
Pantano Wash	29.06	0.08	2.44
Rose Hill Wash (UL)	2.11	0.49	0.49
Guillermo Wash (UZ)	0.75	0.42	0.43
Atterbury Wash (UG)	16.71	0.06	0.10
Mesquite Ranch Wash (UN)	1.15	0.05	0.10
Civano Wash (UR)	3.07	0.05	0.10
Owens Park Wash (UJ)	0.75	0.35	0.37
Rolling Hills Wash (UC)	1.17	0.39	0.40
Eastview Wash (TW)	0.75	0.17	0.20
Spanish Trail Wash (TR)	1.46	0.10	0.14
Escalante Wash (TL)	1.14	0.08	0.12
Tanque Verde Creek	10.91	0.16	1.74
Udall Park Wash (MD)	1.03	0.35	0.37
Robb Wash (MW)	3.51	0.31	0.33
Este Wash (MG)	2.49	0.30	0.32
Wrightstown Wash (ML)	0.67	0.19	0.22
Reyes Wash (MC)	1.18	0.17	0.20
Hidden Hills Wash (MR)	2.03	0.28	0.30
Sabino Creek	0.6	0.43	0.26
Fahringer Wash (MN)	0.6	0.23	0.26

Table 11.4
Annual Pollutant Loading for the City of Tucson's Monitoring Program
Annual Pollutant Load (tons/rainy season)

	Winter 2011-12	Summer 2012	Winter 2012-13	Summer 2013	Winter 2013-14	Summer 2014	Winter 2014-15	Summer 2015	Winter 2015-16	Summer 2016
Total Runoff (Acre-Ft)	8,541	10,833	6,244	5,364	5,707	16,476	7,958	0		
TDS	2,007	1,844	815	1,117	596	7,335	613			
TSS	1,753	3,355	1,967	4,344	1,915	5,756	808			
BOD	542	827	388	163	145	496	318			
COD	3,094	3,040	1,659	2,334	1,417	11,817	1,126			
N	15	18	4	10	8	65	2			
TKN	47	108	16	60	21	307	22			
PO ₄	6	8	4	16	3	28	5			
Sb	0	0	0	0	0	0.1	0.0			
As	0.0	0.1	0.0	0.0	0.0	0.1	0.0			
Ba	1.1	1.7	0.8	0.9	0.0	0.2	0.1			
Be	0	0	0	0	1	3.0	0.4			
Cd	0	0	0	0	0	0.0	0.0			
Cr	0.0	0.1	0.0	0.1	0.0	0.0	0.0			
Cu	0.8	1.0	0.5	0.5	0.1	0.2	0.0			
Pb	0.2	0.3	0.2	0.2	0.5	2.7	0.3			
Hg	0.0	0.0	0.0	0.0	0.2	0.4	0.1			
Ni	0.0	0.1	0.0	0.1	0.0	0.0	0.0			
Se	0.0	0.0	0.0	0.0	0.1	0.2	0.0			
Ag	0	0	0	0	0	0.0	0.0			
Tl	0	0	0	0	0	0.0	0.0			
Zn	4.1	3.6	1.9	1.7	0.0	0.0	0.0			

The runoff volumes have changed from the previous report because actual rainfall and the runoff coefficient (P_r) was averaged obtained from real data at the sample sites and averaged for each of the rainy seasons. These averaged values also changes the Pollutant Load calculations from the previous reports.

PART 12 ANNUAL EXPENDITURES

Expenditures for the many components of the City's Stormwater Program are funded by City Departments and through City membership, sponsorship and contributions to agencies such as Tucson Clean and Beautiful, Pima Association of Governments, and the University of Arizona. The majority of funds expended on programs benefiting stormwater quality come from the City's General Fund. Two City Departments are enterprise funded and many of their costs are not reflected in the table below. It is recognized that a number of costs associated with stormwater protection are not readily available and staff are working toward identifying and developing a tracking mechanism to estimate the costs.

An estimate of annual expenditures for programs with direct stormwater quality benefit is provided in the Table 12.1 below:

Table 12.1

STORMWATER MANAGEMENT PRACTICE OR ACTIVITY		2011-12	2012-13	2013-14	2014-15	2015-16
I	Public Awareness	\$4,794,132*	\$9,957	\$17,000	\$22,033	
II	Public Involvement	\$870,366	\$803,299	\$360,000	\$363,317	
III	IDDE	\$375,875	\$812,842	\$879,000	\$773,939	
IV	Municipal Facility Stormwater	\$1,065,122	\$1,424,474	\$2,461,000	\$1,962,483	
V	Industrial Stormwater	\$27,943	\$35,630	\$21,000	\$33,320	
VI	Construction Stormwater	\$270,573	\$448,406	\$321,000	\$207,313	
VII	Post-Construction Stormwater	VI above	VI above	VI above	VI above	
VIII	Stormwater Sampling	\$24,719	\$37,712	\$51,000	\$26,314	
	Program Administration & Management	\$95,024	\$274,259	\$120,000	\$140,086	
Total Stormwater Expenditures		\$7,523,754	\$3,846,579	\$4,230,000	\$3,528,805	

PART 13 ATTACHMENTS

- Laboratory reports
- Pima Association of Governments Outreach Activities
- Draft Active Practice Guidelines for Stormwater infrastructure Updates
- Drainage System Maps
- New or revised ordinances (There were none this year)
- New or revised public outreach documents (There were no new documents this year)