



Watershed Protection Department FY2013 Annual Report

February 12, 2014

Watershed Protection Department FY 2012-13 Annual Report

The Drainage Utility was established by the Austin City Council in 1991 to manage and fund the ongoing maintenance and repair of the City's creeks, drainage systems and water quality programs. These programs are coordinated under the Watershed Protection Department (WPD), whose mission is to protect lives, property and the environment by reducing the impact of flood, erosion and water pollution. Below is a summary review of the Department's performance and accomplishments for the most recent fiscal year ended.

Financial Summary

Watershed protection activities are largely funded by the assessment of a drainage fee on both residential and non-residential properties. Revenue from the fee represented 98% of all revenue collected in the Drainage Utility Fund (DUF). The utility collected \$65.6 million in total revenue, which was \$752,000 (>1%) more than budget. Total expenditures of \$66.2 million, which included \$31.2 million for program expenses, were \$ 2.7 million (8%) less than budget. Most of the savings came from contractual savings in various Department programs. The Department achieved 125% of its FY 2012-13 Capital Improvement Program (CIP) spending plan goal of \$51.4 million for a total of \$64.0 million. The spending plan included many of the projects discussed in the accomplishments and performance measure highlights section below.

FY 2012-13 Accomplishments and Performance Measure Highlights

Field Operations Division (Infrastructure and Waterway Maintenance Program)

The Field Operations Division (FOD) is responsible for maintaining the storm water conveyance system, which consists of creeks and waterways, pipelines and structural controls. There are three main sections within the division: Field Operations Management (FOM), Storm Water Management (SWM), and Drainage Pipeline Management (DPM).

Field Operations Management

- Crews stabilized more than 1,215 linear feet of eroding and unstable stream banks as well as installed approximately 3,549 feet of storm drain pipe (of various sizes).
- The Open Waterway Maintenance crews cleared over five miles of creeks and channels. These crews also responded to requests from the Flood Early Warning System (FEWS) Engineering Group to manually oversee the operation of the low water road crossing gates during storm events both during and after scheduled working hours. The Open Waterway crews have cut the excess vegetation within creeks and channels to ensure proper storm flow as well as assist with the management of vegetation on City-owned properties. The crews have adopted more sustainable vegetation management techniques, incorporating invasive species identification and control as part of their work. The service level associated with this work unit is expected to

increase as the number of creek and conveyance channel miles increase with annexation of outlying areas and as more buyout properties are assigned to the Field Operations Division.

Storm Water Management

- The Pond Maintenance crews' (SWM) responsibilities include the heavy duty maintenance of all General Fund City-owned ponds. The increase in the number of ponds from annexations and new developments raised the pond inventory to approximately 845. The three pond crews spent a considerable amount of manpower working on older, inadequately functioning ponds at City facilities and within annexed areas. As a result, the goal of maintaining 90% of the ponds in satisfactory operating condition was not met. However, the three pond crews were still able to ensure that 80% were operating satisfactorily at year's end.
- The Lady Bird Lake (LBL) Cleanup section removes floating litter and debris from the lake between Tom Miller and Longhorn Dams to meet community expectations for the visual and water quality conditions of this waterway. The crew works year-round, with particular resources focused on removing the litter and debris entering the lake from major storm events. The cleanup crew, with assistance from the Pond Maintenance crews, removed 143.5 tons of debris versus a goal of 200 tons. The LBL crew began implementing a lower level of vegetation maintenance along the shore-line in support of the request and recommendations from Environmental Resource Management (ERM) scientists. FOD will continue to work with ERM, the Parks and Recreation Department (PARC) and other stakeholders to modify the vegetation maintenance practices to best meet the expected service levels.

Drainage Pipeline Management

- The Storm Drain Cleaning crews are responsible for cleaning the approximately 900 miles or approximately 4,500,000 feet of pipelines that serve as the City's underground storm water collection system. The crews cleaned over 72,000 feet of this pipeline, falling slightly short of the FY 2012-13 goal of cleaning 75,000 feet of pipeline.
- The Storm Drain Rehabilitation crews installed 3,549 feet of storm drain pipe, exceeding the yearly goal of 4,000 feet, and repaired 180 concrete drainage structures.

Watershed Policy and Planning Program

The purpose of the Watershed Policy and Planning Program is to provide direction and oversight of watershed policies, and to coordinate the integration of flood, erosion and water quality activities for City staff and policy makers so they have the information to design, prioritize and implement cost effective integrated solutions that include Capital Projects, Watershed Programs and Regulations.

- Facilitated the adoption of the Watershed Protection Ordinance (WPO) by City Council. The ordinance is a comprehensive overhaul of Austin's environmental and drainage regulations and the culmination of two years of public stakeholder meetings. It extends creek buffers to over 400 miles of headwaters streams, strengthens the protection of floodplains, and recognizes the

need to plan for natural and human-caused creek erosion. Together, these key changes will prevent development patterns that degrade the environment and create unsustainable repair costs for the public. Protections are balanced with additional design flexibility to allow the same overall footprint while keeping development safely back from waterways. By improving the protection of creeks and floodplains citywide, the ordinance also builds a solid foundation of protected and connected green infrastructure from which to begin integrating other city priorities such as trails, community gardens, and parks.

- **Water Treatment Plant #4 (WTP4) Environmental Commissioning** – WPD Policy staff continued this effort to ensure that sensitive environmental features in the area of the WTP4 project are protected from impacts from this project. Particular accomplishments in FY 2013-14 include:
 - Completion of the Jollyville Transmission Main tunnel beneath the Balcones Canyonlands Preserve with no impact to sensitive environmental areas, including springs and stream runs occupied by the Jollyville Plateau Salamander.
 - The project experienced several very large rainfall events with no major failures of erosion and sediment controls on the plant and tunnel construction sites. These rain events were in excess of the design storm, but continued to function well.
- **Lake Austin Task Force** – In May 2012, Council created the Lake Austin Task Force (LATF) to review development and lake use issues in and near Lake Austin. This effort was coordinated and led by WPD Policy staff. The LATF issued its final report with consensus recommendations in July 2013 and in September 2013 Council passed a resolution directing staff to begin implementation of key recommendations.
- **Use of Aggregate in Landscaping** – At the request of the City Council, WPD Policy staff led a public stakeholder process to consider expanded use of aggregate (gravel, rock, crushed granite, etc.) in landscaping, which is currently not allowed in most commercial landscapes. The stakeholder process resulted in staff recommendations to Council (August 2013) allow broader use of aggregate with requirements to ensure water quality and heat island impacts are addressed. In December 2013, Council directed staff to move forward with code amendments to implement those recommendations.

Data Management

The Data Management section provides departmental information technology (IT) support. It is primarily responsible for coordinating and implementing technology across the Department through IT planning services, IT systems analysis, project management and geographic information systems (GIS) and database support. Its work is guided by an Information Management Plan which was completed in October 2006 and received executive team sign-off and CTM concurrence. The implementation of the Maximo Computerized Maintenance Management System (CMMS), continuance of the Drainage Infrastructure GIS (DIG) project as well as other significant projects such as the Floodplain Info System project currently account for the majority of staff time.

- The Data Management section completed a multi-million dollar, multi-year contract with an outside consultant to collect GIS information in the field about above ground drainage infrastructure. This was a City-wide effort that covered the entire service area within which Watershed Protection provides service. Features collected included curb inlets, manholes and drainage outfalls. In total, over 83,000 features were found, captured in GIS and photographed. The project was completed according to schedule and within budget. In addition, it exceeded the established M/WBE goals for the project by a significant margin. This data is currently being integrated into an in house effort that is collecting pipe information from construction plans and site plans.

Value Engineering

The purpose of the Value Engineering (VE) activity is to enhance the value of WPD projects and programs using a systematic and function-based evaluation approach. The VE Team independently reviews WPD's CIP scopes of work, preliminary engineering reports, CIP milestone plans and models, CIP design criteria and methodologies, and service processes and operational procedures. During Fiscal Year 2013, the team continued to broaden its focus beyond the identification of pure cost savings opportunities to include a number of additional value-based parameters encompassing a wider range of solutions, including standards and criteria enhancement, improved project and program approaches, and health and safety risk reduction.

With this focus on value, the VE Team performed a total of 28 evaluations, including 14 scopes of work, three (3) preliminary engineering reports, and 11 special assignments/plan reviews. These reviews resulted in a number of recommendations related to various CIP submittals, program procedures and design criteria. Estimated total potential cost savings identified for the year was about \$1.6M. Some of the major accomplishments of the team included the following:

- Conducted a comprehensive review and evaluation of the department's Stormwater Pond Safety Program, resulting in a list of issues and requirements needing clarification or confirmation from State Regulators on dam safety regulations and design criteria. Phase 1 of the effort resulted in clarification from the state which confirmed that the Texas Commission on Environmental Quality (TCEQ) does not consider a structure to be a dam unless it is over 6 feet high. Phase 2 included the development of a White Paper to facilitate further dialogue with State's dam safety staff (TCEQ) to seek clarification of the pertinent requirements for the City's "tiny" dams (those dams that are smaller than the state defined "small" dam category). A special meeting with TCEQ staff was convened in January 2014. A state response is pending as of February 2014. The clarification may potentially result in significant changes in the City's dam design criteria and dam safety management practices with significant potential savings that can be used toward more effective protection to citizens that are subject to flood risks.
- Reviewed the scope of work for development of a Preliminary Engineering Report (PER) for the Little Shoal Creek (LSC) Tunnel extension to find the best option to safely discharge the 100-year peak flow to either Shoal Creek or Lady Bird Lake (LBL). A number of tunnel alternatives were proposed in the scope, and the VE Team had a number of concerns with a tunnel option in general, including issues: (1) sedimentation accumulation, (2) required waterway permits, (3) potential water quality impacts, (4) high project cost, and perhaps most importantly, (5) the

post-project maintenance (resources and annual operation cost). As a result, the team suggested another alignment alternative which utilizes two discharge locations to Shoal Creek. The suggested alternative could potentially eliminate a longer and deeper tunnel alternative. The final PER results are pending as of February 2014.

- Reviewed the submitted PER for the Charring Cross storm drain project which included the following proposed alternatives: Option 1: 5-Home Buyouts - \$1.88 million; Option 2: Raise Houses Above the 100-Yr Flood Elevation - \$1.86 million, and; Option3: Limited storm-drain improvement to bring the 5 houses out of the 100-year flood level -\$5.9 million. Given the comparable costs for Options 1 and 2, the VE team agreed with the project team on the buyout option. In the spring of 2013, the new estimate for the buyout option was raised to almost \$2.5M (about \$0.5M per house). Given this apparent increase, the VE team was requested to evaluate additional alternatives. The team came up with a conceptual design that included the construction of a berm around the flooded properties and two sump pumps installed within the encircled area to remove stormwater that accumulates within the berm area. The estimated cost of this option was found to be less than \$0.5M. Since that time, a decision was made to pursue a buyout of the two most severely flooded houses.

Watershed Engineering Division (Flood Hazard Mitigation Program)

The Watershed Engineering Division's (WED) mission is to protect the community by reducing the impacts of flooding. WED constructs projects to reduce existing flood hazards and maintains regulatory code and design criteria pertaining to new developments to protect the community from potential future flood hazards.

Localized Flood Hazard Mitigation

The purpose of the Localized Flood Hazard Mitigation (LFHM) activity is to reduce local flooding conditions (flooding away from the creeks) to protect lives and property. Improvement projects are planned, designed and constructed to reduce flood hazards for houses, commercial buildings, and roadways due to the inadequacy or lack of storm drain systems. The section also prepares and negotiates engineering services contracts with consultants to evaluate storm drain systems and design improvements where existing systems are found to be deficient; oversees the work of consultants in evaluating and designing storm drain systems; coordinates projects with residents who may be impacted by proposed storm drain improvements; coordinates with property owners and the Office of Real Estate regarding property rights needed to implement storm drain improvements; and identifies and participates in private-public partnerships or coordination with other City of Austin CIP projects. The LFHM program successfully completed the following projects during the fiscal year:

- East Bouldin Euclid/Wilson Storm Drain Improvements. The purpose of the project, completed in September 2013, was to alleviate flooding of streets, houses and yards in the Dawson neighborhood. It consisted of constructing a storm drain system improvements for the area between Euclid and Wilson streets and East Bouldin Creek. Improvements to a second storm drain system along Cumberland Drive were initially included in this construction contract, but

were removed due to utility conflicts that would have delayed the project beyond a reasonable time. The Cumberland Drive storm drain improvement project will be bid again once the utility has been relocated.

- Completed Little Shoal Creek Storm Drain Improvements. The purpose of the project was to relocate the Little Shoal Creek Tunnel into the Nueces Street right-of-way. The project included upgrading the storm drain tunnel with 13'x8' reinforced box culverts along Nueces Street from 5th Street to 8th Street. The project was the first phase of an ongoing effort to improve stormwater conveyance in the downtown area that drains to Little Shoal Creek. Several more phases will be needed. The project will also facilitate redevelopment in downtown Austin along the route of the Little Shoal Creek Tunnel.
- South Shore Storm Drain Improvements. This project consisted of storm drain improvements to replace an aged and undersized existing system. The project was divided into three phases: Phase A consisted of the upstream portion of the storm drain in Town Creek Drive; Phase B consisted of the middle section of the storm drain from Town Creek Drive at Arena Drive to Lake Shore Blvd.; and Phase C consisted of the downstream section of the storm drain from Lake Shore Blvd. to the outfall at Lady Bird Lake. This project was a public-private partnership with the South Shore PUD developer. Private construction and in-house Field Operations Division construction were leveraged to alleviate street flooding at a fraction of the cost to the City than if the City performed this work independently.
- 46th Street and Airport Boulevard agreement. The City entered into a Community Facilities Agreement with the developer to relocate the existing 30-inch storm drain line in conjunction with the proposed development. The City agreed to pay an amount not to exceed \$49,700 for the relocation of the storm drain line. The agreement included the design, permitting and construction costs to relocate the line. The line was designed to meet the future capacity needs of the existing undersized storm drain line. The City anticipates saving costs on this project compared to approximately \$250,000 for designing, permitting and constructing these improvements as a separate improvement project.

Creek Flood Hazard Mitigation

The Creek Flood Hazard Mitigation (CFHM) activity plans and executes projects to reduce creek flood hazard conditions and to protect lives and property. In addition, this section updates creek flood scores as new information becomes available to help identify those areas in Austin at the greatest risk of flooding. Improvement projects are planned, designed and constructed to reduce flood hazards for houses, commercial buildings and roadway crossings due to out-of-bank creek overflows during extreme storm events. Project types include regional detention basins, flood walls/levees, bridges and culverts, buyout of floodplain properties and stream channel enlargement. This activity also provides review of drainage easement releases and license agreements. The CFHM program:

- Continued construction on multiple projects associated with the Waller Creek Tunnel, which is scheduled to be operational by the end of 2014. Excavation of the mile-long tunnel is complete and the tunnel's concrete liner is approximately 45% complete. Construction also continues on

the inlet at Waterloo Park and the outlet at Waller Beach near the Four Seasons Hotel. Program is on schedule and within budget, within industry standard tolerances, and will provide the infrastructure to allow transformational development in the area.

- Improved the low water crossing at Nuckols Crossing to remain passable during a 100-year storm. This project was designed and constructed in collaboration with the Public Works Department for Regional Stormwater Management Program credit on the Pleasant Valley roadway extension project.

Stormwater Pond Safety

The purpose of the Stormwater Pond Safety (SPS) group is to manage the risk of dam, floodwall and levee failures by assuring that these structures meet or exceed state safety criteria. This section is also responsible for the safety inspection of these facilities, ensuring that adequate maintenance is performed and prioritizing and implementing needed upgrades or repairs to these facilities. The SPS group completed the project below:

- Comburg dam was modernized to reinforce the earthen embankment with turf reinforcing matting and to extend the concrete spillway, concrete parapet wall, and rock riprap. Fencing, a Flood Early Warning System (FEWS) gauge, and a permanent maintenance access point were also provided as part of the project. This work was done to safeguard 108 downstream properties from the risk of a dam breach. Began the design of the repair and upgrade of the Old Lampasas dam, which was damaged by Tropical Storm Hermine.

Regional Stormwater Management Program

The purpose of the Regional Stormwater Management Program (RSMP) is to provide opportunities for private/public partnership funding for regional drainage improvements as an alternative to private development providing on-site detention to mitigate flood hazard increase. The jointly funded projects reduce existing flood hazards and provide mitigation for new development. In addition, RSMP funding can be used for CIP projects that provide a regional detention or conveyance benefit within the watershed that funds are collected from.

- Collected \$375,322 in RSMP fees.
- Completed three RSMP participation projects: Block at 26th, Landmark Southpark and Platinum Onion Creek.

Floodplain Management

The purpose of the Floodplain Management activity is to protect the community from flood hazards by promoting sound floodplain management to citizens, the development community, and City staff. This is accomplished by creating and maintaining floodplain engineering models and maps, coordinating the City's participation in the National Flood Insurance Program and Community Rating System, providing floodplain information to the public, reviewing floodplain development applications, and educating the community about flood hazards.

- In April 2013, the Floodplain Office released FloodPro, a web-based floodplain information tool. FloodPro allows citizens, the development community, and staff to: 1) obtain floodplain information about a particular lot, including water surface elevations, flood zones, and elevation certificates; 2) download engineering models and GIS data for area creeks; and 3) view current and recent rainfall information. FloodPro allows users to access floodplain information at any time and automatically processes information that used to be generated manually by staff. Over the past four years, the Floodplain Office has received an average of 1,100 requests per year. Now that FloodPro can automate most of these requests, staff can focus our efforts on improving our activity's effectiveness and efficiency.
- In June 2013, the Floodplain Modeling and Mapping group completed the engineering studies for eight major watersheds to create updated floodplain maps. The City received a \$1.1 million grant from FEMA in 2010 and spent an additional \$2 million to complete these studies. The information is used to identify flood risk, which can help citizens prepare for flooding, and to assist the City in prioritizing flood mitigation projects to reduce flood risk. The Floodplain Modeling and Mapping group held three public meetings to discuss the studies with the public. Nearly 200 citizens attended these meetings. The group worked in conjunction with the Public Information Office, the Floodplain Management group, and the Flood Warning group to create a project-specific Web site, an interactive flood map, and other outreach materials.

Flood Early Warning System

The purpose of the Flood Early Warning System (FEWS) activity is to protect the community from flood hazards by providing warnings to the public and to the Office of Emergency Management.

- In February 2013, the Flood Warning group released ATXFloods.com, a web tool identifying roads in Austin that are closed due to flooding. ATXFloods.com is also available in a smartphone format. The Flood Warning group has used the site during several storm events. The site has logged more than 120,000 page views since its launch, with more than 8,000 occurring during the storm event on September 20, 2013. We have promoted the site to the media, who have provided links to ATXFloods.com on their web sites. With this technology, the Flood Warning group now has the primary responsibility of notifying the public of road closures, whereas before the Homeland Security and Emergency Management (HSEM) Duty Officer updated their web page with a table of road closures.

Environmental Resource Management Division (Water Quality Protection Program)

Pollution, Prevention and Reduction

The Pollution, Prevention and Reduction (PPR) Section responds to pollution incidents, evaluates and permits businesses and specific non-stormwater discharges, and provides technical environmental regulatory/remediation guidance for City departments, policy makers, the community and regulatory agencies to reduce pollution in our creeks, lakes and aquifers and for compliance with City, State, and Federal stormwater regulations.

- **Wildfire Planning, Response, and Recovery:** Since the devastating 2011 wildfire season, PPR staff has actively contributed as environmental experts to local wildfire planning, response, and recovery matters. PPR staff continues to play a key role on the City of Austin/Travis County Joint Wildfire Task Force, advocating an environmentally sound approach towards wildfire mitigation activities. PPR assisted in the development and review of the draft Austin / Travis County Community Wildfire Protection Plan, with a particular focus towards developing fuel (vegetation) management protocols. PPR worked with other agencies to address wildfire risks in areas with protected vegetation, such as Critical Water Quality Zones, Critical Environmental Feature setbacks, Hill Country Roadway Corridor designated Natural Areas, and threatened and endangered species habitat. Staff expanded and finalized the content of a public education document which promotes a comprehensive suite of environmental Best Management Practices relevant to wildfire readiness and recovery activities. PPR produced a poster graphic that offers environmentally-friendly tips on creating and maintaining “defensible space” around a structure. Additionally, PPR created a calendar page with environmentally-focused wildfire messages that is featured in the 2014 Emergency Preparedness Calendar published by COA HSEM. PPR developed a public website, www.austintexas.gov/WildfireEnviroBMPs, to host our public education materials relevant to wildfire. Staff participated in developing an agenda, retaining key speakers, and hosting a Firewise Landscaping Training workshop as part of the Grow Green Landscape Professional Training series. PPR also developed Firewise Landscaping language to be included in the Grow Green Plant Guide. PPR continued to monitor the environmental recovery at local 2011 wildfire sites. PPR collaborated with AFD and other authorities and responded to citizen concerns regarding potential wildfire risks. PPR monitored the status of possible COA adoption of the International Wildland Urban Interface Code. PPR staff met with Texas House Representative Workman to negotiate the language of a bill that would allow property owners to remove trees without regulatory oversight. PPR staff continues to attend wildland fire workshops and training events to stay abreast of the subject matter.
- **Food Service Environmental Assessment Program:** this program is a cooperative effort between local food service establishments, mobile food vendors, service companies in this arena and the City of Austin Watershed Protection Department to achieve compliance with stormwater regulations. PPR staff work with businesses, private organizations and other City Departments to evaluate and improve practices such as those for used cooking oil storage and maintenance, floor cleaning wastewater disposal, kitchen equipment cleaning, and dumpster area maintenance. This year, Staff redeveloped the food service inspection process, and 70 food service operations (including 62 in the target area along the East 6th Street corridor) were assessed for stormwater compliance. Corrective actions were completed by the responsible party where necessary. Several major stakeholder meetings were conducted jointly alongside ARR with both food service operators and used cooking oil haulers and included some private organization staff and downtown property owner representatives in order to find areas of consensus and help shape an eventual agreement of voluntary standards to prevent spills and improve used cooking oil handling, storage, and transportation issues. Good stakeholder participation led to an agreement to attempt voluntary standards in lieu of developing additional regulatory requirements at this time. After this year’s work, PPR has sufficient benchmarking research, field data, and stakeholder input to propose a set of voluntary

standards to the stakeholder community. Next year, PPR expects the proposed voluntary standards to be accepted by stakeholders and conditions to improve upon their implementation.

- **Coal Tar Ban Enforcement:** During FY 2012-13 PPR staff evaluated 62 freshly sealed lots, of which none were found to contain coal tar sealant. PPR staff mailed out information related to the coal tar ban to over 4,300 business including: restaurants, private schools, auto dealerships, churches, apartments, management companies, hospitals, applicators and producers of coal tar sealant. Additionally, PPR staff shared Standard Operating Procedures for the solvent screening process with multiple entities around the U.S, provided comments on draft coal tar regulations for other cities (i.e. Washington D.C.), and answered a number of inquiries about the City's ban from other cities all across the country. Got the Neyra Plant in Hutto to erect a Coal Tar Ban sign at their front entrance. Reviewed AISD's Paved Surface Management Plan.
- **Barton Springs Salamander Spill Plan:** As part of compliance with the US Fish and Wildlife Service's Endangered Species Permit for the Barton Springs Salamander (Incidental Take Permit 10(a)(1)(B)), the City of Austin has developed and maintained a catastrophic spill plan for Barton Springs. The plan addresses spill prevention, containment, remediation, and salamander rescue procedures should a catastrophic event threaten the habitat. PPR staff trained stakeholders on the plan throughout the Barton Springs Zone including: LCRA field staff, local emergency contractors, and Magellan pipeline staff. Staff participated in a tabletop exercise presented by Magellan that centered on a crude oil discharge into South Boggy Creek and included activation of the spill plan.
- **Urban Seep Program:** This program was developed by the PPR section to more effectively resolve groundwater complaints received from citizens. In FY 2012-13, staff investigated and resolved 11 source water discharges resulting in the discovery and mitigation of one sewer line leak, four waterline breaks, and two illicit subsurface connections improperly tied into the storm sewer system. The remaining discharges were shown to be associated with either rain events, groundwater sources, or a combination of the two. An Urban Seep educational document for citizens was developed.
- **Semi-Public Swimming Pool Compliance:** PPR staff are responsible for regulating potential discharges to storm sewer systems and waterways to protect Austin's water quality and related natural resources. City, State and Federal Rules list pollutants and pollutant levels that cannot be exceeded for discharges including those from swimming pool operations. PPR staff initiated a program in FY 2010-11 to inspect the estimated 656 semi-public pools within the city. During FY 2012-13, 60 pools were inspected, of which ten were found to be illegally discharging to a storm sewer or waterway. All ten were corrected; nine were permanently re-plumbed to an approved area and one was retrofitted so that the backwash discharged to a settling tank. Corrective actions for these violations have resulted in the prevention of approximately 90,000 gallons of filter backwash water being discharged in local waterways per year. PPR staff will continue to inspect approximately 60 semi-public pools each year to ensure compliance. New technology in the area of swimming pool construction resulted in us researching and developing new compliance protocol. We distributed a seasonal press release and developed a

pool ad for the Community Impact Newspaper speaking to pool environmental best management practices.

- **City Facility Compliance:** The City of Austin owns, maintains and manages many properties throughout the city and county. State and Federal stormwater management rules require the City of Austin to inspect specific activities that might be on these properties for compliance with those rules. Sixty-four stormwater discharge inspections of City facilities were conducted (i.e. Austin Resource Recovery facilities, Fleet Service Centers, Austin Energy Power Plants, PARD pool facilities, WTP4 and a ABIA facility) to verify compliance with stormwater regulations. No major violations were found at any of these facilities and all of the minor ones were corrected immediately. Additional forty-two City-owned parcels were visited for the first time to verify compliance. A few minor violations were found at a couple of parcels and were immediately corrected. Staff initially obtained a property list of over 2,000 City-owned parcels from Real Estate Services and identified approximately 160 of the parcels as possibly having regulated activities. Forty parcels will be visited per year until all locations have been inspected. Other City activities that fall under stormwater regulations were evaluated such as for alleyway flushing, sidewalk cleaning, roadway deicing, street resurfacing and marking, and municipal/neighborhood pool operation.
- **Spills and Complaints Response Program:** Since 1986, the City of Austin has operated a 24-Hour Pollution Hotline where citizens and agencies can report pollution events and emergency spills. Staff investigates the complaints to identify pollutants, their sources and the party at fault. Staff then determines what actions are required to achieve regulatory compliance, and oversees cleanup and remediation by the responsible party. In FY 2012-13, PPR staff responded to 1,178 incidents resulting in the removal of over 400,000 gallons and 4,500 cubic yards of pollutants from the environment. Staff responded to several significant incidents including: cleanup and remediation of the largest mercury spill in the City's and State's history, containment and cleanup of a 10,000 gal. diesel spill at the Decker Power Plant which took 3 months to complete remediation, removal of several drums of chemicals from an East Austin alleyway behind residences, a dump truck that landed in a ravine near Lady Bird Lake and Stratford Drive, an 18-wheeler fire on South IH35 at Woodland carrying a load of plastic-wrapped pork bellies, a car that drove off the FM973 bridge in to the Colorado River, and a battery acid spill from several hundred car batteries which spread acid across several lanes of IH 35. Several of these resulted media interviews. This program investigated 5 fish kills in area waterways to identify and remedy the sources.
- **East Austin Environmental Initiative (EAEI):** The EAEI is a program that works to help the East Austin community resolve environmental issues and problems by focusing the City's environmental protection resources. In 1993, City Council mandated the creation of the program because residents expressed concern that the City was not doing enough in East Austin to keep citizens informed about environmental issues and projects or how they could get involved. This year, the EAEI continued with outreach collaborations established over the last few years with a number of governmental and non-governmental groups, including, the Austin Police Dept., the City's Office of Sustainability and several others. Results from a survey distributed last year to the program's focus area community were tabulated to gather

information to help develop new strategies for responding to and addressing citizens' concerns. EAEI staff participated in a number of education and outreach events this year including development and distribution of two newsletters featuring the Community Corner where citizens can speak out with concerns about their community. The program was presented to the Austin Community College Environmental Class and the East Austin Rotary Club. EAEI staff participated in a number community outreach events including the MLK Montopolis Bridge Cleanup, the Shade Tree Mechanic Program promotion, the African American Community Heritage Festival, National Night Out, Austin's Earth Day Event, and at the Austin Hispanic Network Festival. Staff distributed pollution prevention door hangers and newsletters to two neighborhoods in the recently annexed Del Valle area. The program developed a new logo for the 20th anniversary celebration of this Initiative.

- **Rosewood Site Remediation Project:** The Rosewood project involves a City-owned property in the Homewood Heights neighborhood located behind 32 private residences and lots on Ridgeway Drive, Sol Wilson Avenue and Pandora Street. In 2007, after the City removed trash and debris from this area, evidence of an old dump site was found on the property. The remediation plan was completed, a contractor was procured, and the site plan development permits were obtained. One dilapidated structure was demolished on private property in order to achieve proper remediation. Construction started in late 2012. The project was completed in spring of 2013. During this time, staff worked with neighborhood residents to resolve issues that arose during the project. Contaminated materials were removed and a clay cap installed then the area was re-vegetated. A final step included installation of a storm sewer pipe and manhole on the north side. Staff plans to meet with the community to discuss any future development that may be desired in the project area.
- **TPDES Compliance:** As part of compliance with the TCEQ's Texas Pollutant Discharge Elimination System (TPDES) Municipal Separate Storm Sewer Systems (MS4) Permit, the City of Austin maintains a variety of city-wide pollution prevention programs. In FY 2012-13, staff continued the expansion and utilization of a three year plan for the anticipated audit by the EPA that is expected to occur anytime. Staff also continued the extensive review of the State Comptrollers list (40,000 businesses on the list) to assist with identifying certain businesses that are required to have a TPDES permit but failed to obtain permit coverage. TPDES facilities obtain coverage by complying with certain TCEQ stormwater requirements and submitting a Notice of Intent (NOI) or a No Exposure Certification (NEC). Once non-permit coverage facilities are identified, they are first mailed an information packet requesting the appropriate TPDES permit coverage within 60 days. If coverage is not obtained within this time period, staff initiate regulatory enforcement activities starting with a site compliance visit and, if necessary, eventual referral to the TCEQ for State enforcement. In addition, in FY 2012-2013, staff were heavily involved with updating permit documentation for the TPDES regulated sites within the City's jurisdiction. This became necessary when the TCEQ recently revised and reissued the TPDES Industrial General Permit. Staff had the arduous task of contacting every industrial facility and requesting updated copies of newly issued NOI's, NEC's, and SWMP certifications. In FY 2012-2013, staff also conducted TPDES inspections of all Austin Bergstrom International Airport (ABIA) "airside facilities" (e.g. airline and cargo terminals, aircraft maintenance and

fueling areas, etc.) to verify compliance with stormwater regulations. This is done in conjunction with environmental and engineering staff from the Department of Aviation.

Contaminated Groundwater Tracking Program

In March 2008, City Council requested a study regarding quantity and quality of groundwater discharged from underground structures. The resolution included identifying potential areas of documented groundwater contamination that may impact existing or proposed developments with underground structures. PPR staff conducted extensive research in 2008 and produced a routinely updated data tracking system, as well as a map now used by plan review staff. This map assists them in determining when to refer sites with potential groundwater issues for our review. The pilot area in FY 2010-11 reached from Lady Bird Lake to 15th Street and I35 to Mopac. In FY 2011-12, PPR expanded the area from 15th Street up to 38th Street. Then in FY 12-13 staff shifted focus to south of the river from Ladybird Lake to Ben White and Mopac to I 35. Site visits in this area included identification of existing/historic facilities that already have underground structures that may be discharging contaminated groundwater to the City's stormwater conveyance system. Using a combination of aerial photography and extensive field verification, staff identified 5 facilities actively discharging groundwater from underground sump systems (30 to date). Further research is being done to check the proximity of these sump systems to historic groundwater contamination. In FY 13-14, staff will initiate contact with any suspect businesses that may be discharging contaminated groundwater and provide assistance with mitigation of the problem.

Water Quality Education


The Water Quality Education Section provides educational materials and conducts outreach to the community on strategies to prevent water pollution and stream erosion. Key accomplishments include:

- Keep Austin Beautiful Award Finalist in the Beautification Category for Grow Zone riparian restoration.
- Children in Nature Collaborative of Austin's Environmental Education award for Earth Camp.
- Cities of Service Grant to involve volunteers in the implementation of the Invasive Species Management Plan.

Water Resources Evaluation

The Water Resource Evaluation (WRE) Section conducts water quality monitoring and assessments for use in the Department's master plan; regulatory and policy revisions; TPDES permit compliance; and the Texas Clean Rivers Program administered by LCRA. WRE plans and implements aquatic/riparian ecosystem restoration projects through staff, volunteer, and capital budget methods. The section also performs site plan reviews to identify critical environmental features and provides ongoing environmental technical assistance for major capital improvement projects. WRE reviews TCEQ, TPDES and Texas Land Application Permits (TLAP) with potential impacts on Austin water quality. Staff conduct U.S. Fish and Wildlife Service (USFWS) permit compliance monitoring and management activities required for the federally listed Barton Springs salamander

(*Eurycea sosorum*) necessary for continued recreational use of Barton Springs Pool. WRE also conducts monitoring and management projects for the Austin Blind (*E. waterlooensis*) and Jollyville Plateau (*E. tonkawae*) Salamanders currently in the federal listing process. Below are some of the group's activities for FY2012-13:

- **Invasive Species Management Plan Data Collection:** A City Council resolution in 2010 directed development of the City of Austin Invasive Species Management Plan (ISMP). The ISMP lays out goals, objectives and methods for managing 24 invasive plant species on city property. A critical initial component of this plan was creation of a database of plant distribution, density and extent. The creation of the database was initiated and completed in the summer of 2013 utilizing 150 trained volunteers, 5 interns and a several city staff members. This group collected over 2,200 data points on 40 City of Austin priority parcels, detailing ecological and demographic patterns that will allow development of sound management practices and efficient utilization of limited resources to address this significant land management problem. The human resource challenges of large amounts of data, large numbers of people and limited time were significantly reduced by adoption of a new digital data collection method, funded by CIP dollars that has developed an entirely new data management paradigm and greatly improved the efficiency of this group of scientists.
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- **Barton Springs Habitat Conservation Plan and US Fish and Wildlife Service Incidental Take Permit:** The Watershed Protection Department revised and extended the Barton Springs Habitat Conservation Plan (HCP) through year 2033. An HCP is required by the US Fish and Wildlife Service because Barton Springs is home to two federally endangered salamander species, the Austin Blind Salamander and the Barton Springs Salamander. The operation of Barton Springs as recreational facility requires an HCP and an incidental take permit from the US Fish and Wildlife Service. The previous permit was issued in 1998 and expired in October 2013. WPD staff began revising the HCP in May 2011, and a new permit for Barton Springs was issued in September 2013 and will allow for continued operation of Barton Springs through 2033. An Environmental Assessment (EA) of the HCP was required under the National Environmental Policy Act to be completed by a consultant. Weston Consulting completed the assessment using WPD CIP funds.
 - **Jeremiah Ventures wastewater land application permit settlement.** A settlement agreement was reached on the first large scale Texas Land Application Permit (TLAP) to be issued by the Texas Commission on Environmental Quality (TCEQ) for irrigation disposal of treated wastewater in the Barton Springs Edwards Aquifer recharge zone. WPD worked with the Law Department in initial settlement negotiations and mediation leading to an agreement that was

adopted by the Barton Springs Edwards Aquifer Conservation District, the Lower Colorado River Authority and Hays County. WPD assisted Law in developing discovery requests, responding to the applicant's discovery requests, and depositions of applicant's expert witnesses and TCEQ staff involved in the case. WPD staff served as expert witnesses and provided pre-file testimony as well as depositions. An order for entry to the property for karst feature analysis was obtained twice in the case as conditions and design changed. WPD geologists and cave experts combed the property and found a multitude of recharge features not identified by the applicant. WPD contracted with a local engineering expert witness as well as providing on-staff expertise. The final trajectory was for a contested case hearing; however, at the last minute, the applicant made a final attempt at a settlement which was accepted by Council. The primary condition of the settlement making it acceptable was to design, construct and operate a WWTP to meet stringent effluent limits that are anticipated to reduce impacts of the project on the aquifer to the lowest level possible using today's technology. COA Law attorneys were to participate in hearing between the applicant and SOS to promote the settlement agreement; however, the hearing was postponed pending a potential conservation easement under negotiation on the property.

- Pearson Ranch Road Void Mitigation. WPD staff reviewed construction of Pearson Ranch Road, Apple Riata, Pearson Place II subdivision and England Elementary School, which are located over the Northern Edwards Aquifer Recharge Zone. Because of the underlying karst aquifer, more than 150 voids were intercepted during construction and with WPD oversight the exposed voids were appropriately mitigated. Significant WPD coordination with the Texas Commission on Environmental Quality and the Austin Public Works Department was employed to mitigate the voids and conduct the necessary structural analysis.
- Memorandum of Understanding between Watershed Protection Department and the Parks and Recreation Department regarding Grow Zones. In an effort to more efficiently and effectively manage both park and water resources, an agreement was developed between WPD and PARD staff to establish Grow Zones, or stream buffers along creeks, in 18 Austin parks. Historically, these areas had been managed by mowing and string trimming all vegetation in and around streams in parks. This practice results in poor water quality in our streams, erosion of our banks, and a steady decline in our urban forest. The Grow Zone inter-departmental agreement reduces mowing and maintenance costs for both departments, lowers carbon footprint, allows for reforestation of the critical buffers along streams, and improves the filtration, diversity and function of our riparian ecosystems. This agreement has opened the doors for a variety of inter-departmental collaborations as well as a wide variety of stakeholder involvement in the health of our streams.

Stormwater Quality Evaluation

Stormwater Quality Evaluation (SQE) provides support for various other sections of WPD including education, planning and stormwater treatment by monitoring the quality and quantity of runoff from different land use types, evaluating the performance of different water quality controls and developing watershed scale water quality models to evaluate different development scenarios. Highlights of the year include:

- The SQE Section completed two reports this fiscal year reviewing almost 30 years of performance data on stormwater control measures (SCMs, also known as BMPs). Since the data were collected over many years by different City staff, a complete review of all of the data was required to ensure consistency. This required visiting sites that had not been monitored in more than 20 years and deciding what happened then. Analyses of nearly 30 SCMs following techniques outlined by EPA for the International BMP Database project were completed making this the most comprehensive report on Austin area SCMs ever. In addition, a companion report was produced comparing the performance of primary water quality controls in the Austin area. These reports will serve as the technical backing to update the COA Environmental Criteria Manual.
- The SQE Section started a project to update all of their water quality monitoring flow meters. This CIP project will result in the most advance monitoring system in Texas, if not else were. Existing equipment was developed in the early 1990s and is reaching the end of its useful life. This upgrade will allow staff to review the monitoring status via the web and the meters can be programed to email or text staff when problems occur. SQE staff worked with the Lady Bird Johnson Wildflower Center to evaluate the effectiveness of green roofs from a water quantity perspective.
- The SQE Section created a SWAT model and used it to evaluate the impacts of uncontrolled development on flooding, erosion and aquatic health. The model was then used to evaluate the effectiveness of different City ordinances. The original Waterways Ordinance was designed to control flooding; it did provide protection for large flooding events but had minimal impact on more frequent events and actually exacerbated erosion and stream aquatic health. Including a water quality component in the Comprehensive Watershed Ordinance helped control flooding from small storms, reduced erosion and improved stream health. The proposed Watershed Protection Ordinance was also tested and found to be beneficial to all mission associated with the Watershed Protection Department. Results of this project were presented at the International SWAT Conference in Toulouse, France.

Sustainable Stormwater Solutions

The Sustainable Stormwater Solutions Section focuses the Department's efforts on sustainable engineering solutions regulatory approaches, community education opportunities and maintenance practices that allow cost effective implementation of our WPD objectives. Three teams comprise the section: Green Infrastructure, Stream Restoration and Stormwater Treatment.

Green Infrastructure Team

In July 2011, the Watershed Protection Department formalized its commitment to Green Infrastructure by creating the Green Infrastructure Team. This team is a cross-disciplinary unit with members from each of Watershed's functional units: water quality, stream restoration, flood mitigation, education, maintenance, policy and planning. The mission of the team is to: investigate the opportunities for using Green Stormwater Infrastructure (GSI) to reduce flooding and erosion,

improve water quality and reduce the use of potable water for landscape irrigation; and create a blueprint for optimizing its use.

Stormwater Treatment and Stream Restoration

The purpose of the Stormwater Treatment Program is to reduce pollution in stormwater runoff and maintain or enhance baseflow in Austin streams. The Stream Restoration Program's objective is to create a stable stream system that decreases property loss from erosion and increases the beneficial uses of our waterways.

- **Stream Restoration Design Projects Completed**

Fort Branch Reaches 6 & 7 Channel Rehabilitation: Construction to stabilize the severely eroded creek banks and to mitigate flood-prone areas in the Lower Fort Branch Creek watershed commenced in October 2012. The project included replacement of an aging culvert with a span bridge at Fort Branch Boulevard, stabilization of approximately 1,600 linear feet of stream channel using bioengineering methods and upgrades to the storm drain system to reduce street flooding. The project provided property protection, improved public safety and enhanced the environment using an integrated approach to Stormwater management.



Severe erosion in Fort Branch Creek



Creek stabilization using bioengineering methods

Lower Shoal Creek Peninsula Restoration: Construction to stabilize the shoreline on Lady Bird Lake at the Shoal Creek Peninsula trail that was being threatened by erosion commenced in December 2012. The project includes shoreline restoration using native limestone boulders, upgrading the pedestrian trail, replacing failed retaining walls with natural shoreline stabilization and native landscape restoration. The project prevented loss of parkland to erosion; improved public safety and mobility; and enhanced the natural park environment.



Erosion along the Butler Trail at Lady Bird Lake



Project Construction September
2013 using limestone boulders

Boggy Creek Greenbelt-Reach B8 Stream Restoration: Construction of this 2006 Bond-funded project commenced October 2012. Boggy Creek in Rosewood Park was beset with erosion, leaking wastewater lines and poor water quality. This project is removing the wastewater lines, stabilizing the erosion and restoring native stream habitat such that the creek is an amenity, rather than a liability, to the neighborhood. Total project length is 3,000 linear feet.



- **Construction Projects Completed**

Lakeshore PUD Wet Pond: WPD partnered with a developer to build a regional water quality pond. This pond is located on a 48.9 acre parcel that is developed and privately owned. The primary purposes of the project was to capture and treat runoff from the onsite and offsite drainage areas (162 ac.) to improve EII (Environmental Integrity Index) scores - especially water quality and aesthetics - and reduce pollutant loads discharged to Lady Bird Lake.

Support Services

There are a number of key sections within the Office of the Director which contribute to the success of the Department through the provision of important internal operational support services. These areas include, but are not limited to the following: Financial Management, Human Resources/Safety, Public Information, General Administration, and Recommendations for Council Action (RCA) support.

Below are a few highlights from Support Services sections:

Human Resources / Safety Office

The Human Resources (HR) group provides support to the Department in the areas of employee relations, workers' compensation, family medical leave, compensation, payroll, ADA, occupational safety and health, training and employment. Additionally, staff provides advice and counsel to employees and management in adherence to City policies and procedures, State, Federal and local laws governing human resources, safety and occupational health activities.

In FY 2012-13, WPD HR/Safety achieved the following:

- HR created and implemented the department's 1st formal Internship Program. The department hired 15 interns from various colleges and universities throughout the great state of Texas. This was the largest group of interns hired during a summer period.
- Worked with Human Resources to launch Career Progression Program for field operations staff. Safety and health staff developed and provided specialized trainings for career progression participants including measurement of competency obtained by students.
- Implemented Employee Safety Recognition Program for high risk field employees. This included developing a tracking mechanism for each individual employee and implementing an onsite field recognition stop card program for daily use in the field.
- Conducted 28 WPD and PDRD Departmental Safety Plus meetings and over 60 individual section trainings.
- Participated in review and update of the WPD Continuity of Operations Plan, including executive summary, ready reference guide and the addition of the Dalton Lane field operations facility to the alternate facility process.
- Supported WPD OTC staff and field operations personnel in Waller Creek Tunnel construction activities and the development of operating and spill response procedures in preparation for bringing the facility on-line.
- Provided extensive support to the Barton Springs Bypass project. Responded to needs of staff biologists and CIP project manager on a weekly basis to manage construction project while maintaining safe environment for continuation of minimum requirements under the P&W permit.

- Worked with Geologists to develop, review and implement procedures to be used when conducting work in and around caves. Specific attention given to confined space procedures for entry into caves.
- Review and revision of procedures in compliance with NFPA 70E for electrical inspectors.
- Maintained Equipment Training Program, Graduation of eight employees from the program; Graduation of three employees from Basic Skills Training.

Public Information Office

The Public Information Office (PIO) ensures that media and citizens receive accurate information in a timely manner about the Watershed Protection Department's flood and erosion control and water quality programs and initiatives. PIO also educates and encourages our external and internal customers to participate effectively in these programs through a variety of communications strategies and tools. These strategies and tools include working with the media to inform the public, the development and maintenance of internet and intranet sites, brochures, advertising, facilitating public meetings, etc. Watershed PIO also responds to Customer Assistance Forms (CAFs), Public Information Requests (PIRs), and handles Records Management.

During FY 2012-13, PIO had 273 media contacts for an advertising equivalency of \$559,330, had 628 Public Information Requests, and prepared 34 Customer Assistance Forms. All of these were 100% on time. The WPD Records Analyst reviewed 40 requests for disposition and approved recycling, shredding or transfer of more than 81 standard boxes and 37 map boxes and deletion of approximately 100 GB of electronic records.

The Flood Awareness Campaign incorporated media events throughout the year, including a Flood Awareness Week media campaign. Activities included the Turn Around – Don't Drown poster contest, news conferences announcing ATXFloods.com and FloodPro and a media tour of the Waller Creek Tunnel Inlet.

PIO also ran emergency and educational radio advertising on flood safety and "Save Yourself! Turn Around – Don't Drown" in English and Spanish, held a media briefing for the completion of the Barton Springs bypass tunnel and assisted with communications for the Lake Austin Task Force, the floodplain mapping study, the Shoal Creek Peninsula restoration and the Habitat Conservation Plan.

The group continued to provide assistance with the November 2006 Bond storm drain projects and Watershed Engineering initiatives, as well as facilitated 17 public meetings on topics ranging from the TMDL fecal bacteria in creeks to the floodplain mapping study to the Eliza Spring daylighting project. Additional activities included presentations for CityWorks Academy and AustinCorps, exhibits at several events such as WeatherFest and the Water/Science Expo, monthly intranet features and updates, and Watershed Moments to enhance internal communications.

Special note on the Halloween 2013 flood event

Although this event occurred outside of the timeframe of this report (FY14 versus FY13), it is included here because of the significant role WPD staff played during the storm as well as the storm's impact on Department activities going forward.

Background

On October 31, 2013, a flood of record occurred on Onion Creek. Preliminary estimates from FEMA and the 311 database indicate 825 homes were damaged, and five people died as a result of the flooding. Although there was damage in many parts of the city, the most substantial damage was concentrated in the Onion Creek area.



The Watershed Protection Department has partnered with the U.S. Army Corps of Engineers since 1999 to find solutions to flooding in the Onion Creek watershed. Our joint study ultimately included the recommendation to buyout 483 homes in the 25-year floodplain within the Onion Creek Forest, Onion Creek Plantation and Yarrabee Bend neighborhoods. At the time of the Halloween Flood of 2013, the City had already purchased 323 homes and relocated their occupants to homes safe from flooding. This greatly reduced the number of people and homes at risk during the recent flood.

WPD activities during the flood event

The flood event left a huge wake of debris, trash and pollutants throughout the banks and flood plain of Onion creek and portions of Boggy Creek; most notably in the area from Bluff Springs Road and Nuckols Crossing, all the way to McKinney Falls State Park

Flood Early Warning System (FEWS) and Field Operations staff worked together to provide monitoring and emergency response activities during the storm, including 40 road closures, response to 3-1-1 flood-related calls and debris removal.

The Pollution Prevention and Reduction Section (PPR) immediately devised a plan to assess the environmental impact and determine remediation strategies to help restore the area. PPR staff flagged and mapped the locations of any chemical pollutants unknown drums, paints and petroleum products that were deposited in the creek, along the creek banks or in city-owned greenbelts. PPR staff removed and disposed of the large chemical containers as well as many of the smaller pollutant containers on City property and in the creeks.

WPD post flood event activities

The removal and proper management of accumulated woody debris from this event will continue throughout 2014 due to the large scale nature of the situation. The Watershed Department staff worked with FEMA to identify debris removal activities that will be reimbursable.

Among the 825 flood-damaged homes, all 160 homes remaining in the Corps buyout area were damaged, including 24 completely destroyed properties and 92 properties with major damage. The Watershed Protection Department has identified \$19.6 million in available funds for these properties through a combination of Drainage Utility Fee funds, 1984 and 2006 Bond packages and Regional Stormwater Management Program. In this initial emergency buyout program, 116 homes will be removed from the floodplain.

The Department is working on a longer term plan to continue accelerated buyouts in this area.

