

**FY11 Annual Report  
to the  
Environmental Board**

**February 15, 2012**

## **Watershed Protection Department FY11 Annual Report**

The primary functions of the Watershed Protection Department (WPD) are to protect lives, property, and the environment of the community by reducing the impact of flooding, erosion, and water pollution. This fiscal year the Department has had successes in many areas while also improving its effectiveness and facing challenges posed by the economic climate. Below is a summary review of the Department's performance and accomplishments this year.

### **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 \$59.5 million in total revenue, which was \$265 thousand less than budget, primarily due to lower than budgeted interest amounts. Total expenditures of \$63.2 million, which included \$35.2 million for program expenses, were \$1.8 million (3%) less than budget. Most of the savings came from contractual savings in various Department programs. The Department achieved 122% of its FY11 CIP spending plan goal of \$39.0 million for a total of \$47.5 million. The spending plan included many of the projects discussed in the accomplishments and performance measure highlights section below.

### **FY11 Accomplishments and Performance Measure Highlights**

#### **Field Operations Division (Infrastructure and Waterway Maintenance Program)**

The Field Operations Division 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: Open Waterways and Erosion, Construction and Concrete, and Residential Ponds and Lady Bird Lake.

- Both erosion repair crews were fully operational with the required equipment. The intent was to have one supervisor for each crew. However, budget constraints prohibited the approval of a new supervisor, so the two crews were managed by one supervisor. Even with this limitation, the two crews completed five projects and stabilized 1,751 feet of stream channel embankments exceeding the goal of 1,500 feet.
- The Open Waterway Maintenance crews cleared 6.68 miles of creeks and channels exceeding the goal of 6.00 miles. These crews also responded to requests from the 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 now assumed the responsibility of cutting the excess vegetation on 19 City-owned lots. The number of lots requiring this service is expected to continue to increase as more buyout properties are assigned to the Field Operations Division.
- The Pond Maintenance crews' 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 830, representing an increase of two percent. The three pond crews spent a considerable amount of manpower assisting the Lady Bird Lake Cleanup crew, because it was extremely short handed. 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 85% were operating satisfactorily at year's end. However, the ultimate goal of 100% will not be reached without another crew.
- The Lady Bird Lake Cleanup activity, which removes floating litter and debris from the lake, spent over 10,000 man-hours removing the litter and debris entering the lake from major storm events between Tom Miller and Longhorn Dams to meet community expectations for the visual and water

quality conditions of this waterway. The cleanup crew, with assistance from the Pond Maintenance crews, removed 230 tons versus a goal of 200 tons. A team of trained observers (scientists and biologist from within WPD) conduct quarterly surveys on the lake to measure the aesthetic quality, utilizing a scale of 1.0 to 5.0, with 1.0 being the best score. During the reporting period the yearly average rating was 1.1, a nearly perfect score and well below the maximum goal limit of 2.00.

- 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. Five percent, or 100,000 feet, is the long term annual cleaning goal. The crews cleaned 70,235 feet falling short of the FY11 goal of 75,000 feet. This result was mainly due to the lack of consistent equipment utilization; the Vactor trucks lost significant amounts of productive time due to the length of time spent in repair with the Fleet Department. The crews cleaned 7,811 inlets during the year, but in order to reach the long term goal of cleaning 100,000 feet of pipeline per year, another crew and Vactor truck are needed. In addition, the crews responded to 516 "311 Telephone System" calls during storm events.
- The Storm Drain Rehabilitation crews installed 5,459 feet of storm drain pipe exceeding the yearly goal of 4,000 feet and repaired 149 concrete drainage structures; falling short of the yearly goal of 180 structures. This work was accomplished with two construction crews and three concrete crews. Two more construction crews are needed to achieve the long term goal of installing 10,000 feet and to be able to initiate a preventative maintenance program.

### **Watershed Master Planning Program**

The purpose of the Watershed Master Planning Program is 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. Highlights include:

- Coordinated with the Capital Planning Office to identify projects for the Capital Needs Assessments.
- Coordinated with the Capital Planning Office on new Citywide process for evaluating potential for cross departmental participation on Citywide Priorities for CIP appropriations.
- Through development of the annual CIP plan, WPD implements a Capital Appropriation Process which insures that all CIP projects funded by the Drainage Utility Fund, the Urban Watershed Ordinance Fund, and the Regional Stormwater Management Fund undergo a review process by an intradepartmental cross mission team to identify, prioritize and develop responsible funding initiatives for CIP projects to address water quality, channel stability and stormwater conveyance needs. The process also includes preparation of annual and long range appropriation plans that reflect individual watershed mission priorities and insure opportunities for mission integration. Technical reviews are completed for CIP project submittals to identify the best solutions for watershed improvements that do not create adverse impacts to any WPD missions, and that maximize opportunities to address multiple mission needs.

### **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 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 Maximo CMMS project went 'live' at the end of the fiscal year after a number of years of preparation. WPD Field Operations division is now utilizing the system (in concert with CSR/311) for all of its work management planning and reporting. The Pollution Prevention group will be the next major WPD work group to be moved into Maximo.
- The DIG project completed the entry of approximately 50% of construction plans identified to contain stormwater infrastructure. DIG also spent 98% of the estimated spending plan goal for FY11.
- The Data Management section, Field Operations Division, and CTM Wireless shop coordinated the installation of 97 Automated Vehicle Location (AVL) devices within Field Operation's vehicles. Training was provided to staff on how to utilize the desktop reporting software. Phase 2 of AVL installation is planned for FY12.

#### Data Team

The formation of a 14 member Data Team was initiated at the end of the fiscal year. The purpose of this team is to provide guidance for the acquisition, organization and dissemination of Watershed Protection's data. Preliminary objectives of the team include efforts to identify gaps, prioritize projects, and direct resources. A Data Org Chart is expected to be the first major deliverable of the team in FY12.

#### Value Engineering

The purpose of the Value Engineering (VE) activity is to enhance the value of WPD projects using a systematic and function-based evaluation approach. The VE Team (comprised of two full-time professional engineers) independently and systematically evaluates WPD's CIP scopes of work, preliminary engineering reports and other CIP milestone plans and models. Numerous recommendations were made over the course of FY11 resulting in improved individual CIP design plans or methodology, increased project value and function, reduced project construction and future O&M cost as well as reductions in potential adverse impact. Following are some of the highlights from the VE Team's efforts:

1. AECOM Engineers completed a preliminary engineering report (PER) on the Barton Springs Pool Bypass Repair project. Two items of concern were identified: (1) A new bottom slab (10" thick) composed of heavy concrete for tunnel segments 9 through 13, and (2) two new manholes to be constructed through the top slab of the bypass tunnel. The VE Team recommended the use of normal concrete for the five upstream segments because of its demonstrated stability, and recommended that no manhole be constructed on top of the bypass slab because of the difficult construction; the reduction of bypass flow and the potential safety issues associated with misuse of the manholes. The recommendations were accepted with a potential savings of about \$82,000.
2. Datum Engineers, Inc. (DEI) was hired to conduct a structural condition assessment for the upstream and downstream dams of the Barton Springs Pool. DEI proposed conceptual repairs to the existing structures and estimated the probable construction cost. The VE Team disagreed with DEI's interpretation of the USACE's design standards, application conditions, and DEI's stability analysis that was used to draw the conclusion on the stability of the dams. DEI's cost estimation was substantially higher than AECOM's for the same location, same type of rock anchor and same geological conditions. As a result of the VE evaluation, AECOM was contracted to design the dam repairs and estimate the probable cost. The potential savings is about \$260,000.
3. In FY11, The VE team made a number of recommendations regarding individual CIPs, and significant portions of those suggestions gained project manager/sponsor acceptance, including:
  - Brentwood Green Infrastructure Study: The VE Team's recommendation resulted in a slight change in the study's focus from evaluating integrated "Grey & Green" design benefits to evaluating the net benefits and O&M needs from "Green" infrastructure only. Results from these evaluations will be helpful in guiding the City's future green infrastructure planning, budgeting, development, operation and maintenance.
  - Storm-Drain Outlets Data Collection: To reduce survey cost and obtain reasonable elevation data, the DIG project team planned to use LiDAR data, field depth measurements, GIS filtering

tools, and hydraulic modeling to estimate the missing outlet elevations. Due to the importance of the outlet elevation data in both H&H modeling and storm-drain system design, the VE Team recommended that the DIG Team conduct the surveys of the 6000+/- outfalls based on priority and needs in the coming years. Although the DIG team's proposed method would entail less than 50% of the survey cost, the accuracy would not be up to the preferred level of reliability for modeling or design and would likely still require detailed survey of the outlets in the end. Therefore, the recommendation of the VE Team, while not the least expensive upfront option, was considered a better value-based approach for the long term.

- Lower Shoal Creek Stream Restoration and WQ Control: The probable cost was initially estimated to be about \$5M. The recommended use of "manufactured treatment devices" (MTDs) is new to Austin and costly. There are a number of advantages and disadvantages for implementing the MTDs. The VE Team recommended performing a feasibility study to evaluate and conceptually design the MTDs while holding off all later phases of the project until City staff evaluates the study results and agrees to adopt the use of selected MTDs.
- Reznicek WQ Pond Design: The upstream drainage area of the pond is flooded even at a 2-year storm event. A preliminary engineering analysis and conceptual storm-drain design were completed through the study. Due to budget constraints, the project team decided only to design and construct the water quality pond. The VE team recommended that during the WQ pond design, other related structures, such as the diversion weir and discharge structures, be designed and constructed to accommodate storm water from future storm-drain and detention pond upgrades to avoid future demolition (waste) and redesign of those structures.
- Reilly Pond and AISD Pond Analysis: The flow conditions are complex in this area of town. Two analyses were conducted separately by the firms FNI and CPE respectively. The VE team felt that both analyses were not fully reflective of the flow conditions needed for design. WED staff agreed and has contracted EC to re-model the flow conditions and design the detention ponds' upgrade.
- David Moore Low Water Crossing Upgrade: Design Engineer (HDR) recommended Alternative #1 out of four proposed Alternatives. The VE Team recommended Alternative #4 mainly because it will preserve natural creek flow characteristics and avoid future time-consuming and costly maintenance. Alternative #4 also reduces or avoids the requirement of easement acquisition. The WED project team later chose Alternative #3. The VE team, after further review, agreed with the selection of Alternative #3 because its design is closer to #4 in preserving creek characteristics. Alternative #3 initially costs less but does have potential for culvert sedimentation which may require some-degree of post-storm cleanup. Both Alternative #3 and #4 are significantly different from Alternative #1 in preventing sedimentation and debris accumulation.
- JJ Seabrook Stream Restoration: It was realized through this project that due to limited resources in WPD, the Master Plan (MP) priority scores are currently not updated on a yearly basis through the MP GIS base map. Since CIP prioritization is primarily based on the scores, the VE team recommended that the MP scores be updated annually, and the MIP Team concurred.

### **Watershed Policy Program**

The Watershed Policy Program provides direction and oversight of Citywide environmental compliance for programs, policies, initiatives and regulatory standards. It directly responds to Council resolutions and City Manager's office requests and coordinates City Code and Drainage and Environmental Criteria to support all three departmental missions. The group has a special focus on growth management with respect to watershed and environmental protection. Its activities include coordination of Department policies and programs with other city departments, other governmental and institutional entities, and the public. The overall goal of the program is to advise senior officials, make recommendations that help shape significant City policies, and represent the City in strategic arenas.

- **Watershed Protection Ordinance**. In January 2011, City Council requested via resolution that WPD staff develop a new ordinance to improve creek and floodplain protection; prevent unsustainable

public expense on drainage systems; simplify development regulations where possible; and minimize the impact on the ability to develop land. The effort is the first of its kind since the Comprehensive Watershed Ordinance was passed in 1986. Staff conducted a detailed analysis of current code deficiencies and needs in the first half of 2011. In August, staff kicked off a full-scale community stakeholder process with representatives from a wide range of public and private interests, with public meetings held approximately every two weeks thereafter. The project focused in 2012 on protection of "headwaters" streams and floodplains and expects to complete its work on these and other topics in 2012 to present an ordinance to boards, commissions, and Council.

- **Green Roof Advisory Group.** WPD staff led an interdepartmental effort to support a Council resolution to encourage the use of green roofs in Austin. Staff worked with a citizen's advisory group to hammer out a green roof element for inclusion in the downtown density bonus program, developed a set of performance standards for green roofs projects supported by City incentives, and published a new green roof web page. Work on resolution action items was completed in November of 2011, though staff efforts continue with the implementation of the Council-supported 5-Year Green Roofs Policy Implementation Plan.
- **State of the Environment Report.** Reformatted report to 1) make a shorter and more graphic report that focuses on key indicators and trends representing the physical environment, 2) develop a standard outline for each section of the report that provides information on the importance of each section along with its goals, challenges and responses, and status and trends, 3) include brief annual focus to eliminate overlap with other City reports, and 4) coordinate with the Office of Sustainability.

### **Watershed Engineering Division (Flood Hazard Mitigation Program)**

The Watershed Engineering Division's (WED) mission is to reduce existing flood hazards to protect lives and property. WED also maintains regulatory code and design criteria pertaining to new developments in order to protect lives and property from potential future flood hazard increases.

#### Field Engineering Services

Field Engineering Services (FES) researches citizens' flooding complaints and provides a response to the citizen as well as locating storm drain infrastructure, utility coordination, and small project construction management services to protect lives and property from flood hazards.

- The Field Engineering Services group responded to utility location requests, Austin Utility Location Coordination Committee requests, requests from the Field Operations Division for assistance, and 268 flooding complaints.
- The FES met performance goals including marking 5% of utility location requests and investigating 268 drainage concerns.

#### Localized Flood Hazard Mitigation

The purpose of the Localized Flood Hazard Mitigation (LFHM) activity is to reduce local flooding conditions to protect lives and property. Improvement projects are planned, designed and constructed to reduce local flood hazards for houses, commercial buildings and roadways due to the inadequacy or lack of local (street) storm drain systems. The section also prepares and negotiates engineering services contracts with consultants to evaluate local storm drain systems and design improvements where existing systems are found to be deficient; oversees the work of consultants in evaluating and designing local storm drain systems; coordinates projects with residents who may be impacted by proposed storm drain improvements; coordinates with property owners and the Real Estate division in property rights needed to implement local storm drain improvements. The LFHM program:

- Negotiated preliminary engineering services for the MLK-TOD storm drain improvements project, and worked with consultant in the evaluation of existing conditions and proposing alternatives for improvement;
- Reviewed and commented on 34 submittal packages related to the planning and design of storm drain capital improvement projects;

- Reviewed and commented on 57 submittal packages related to the planning and design of storm drain improvements associated with City street reconstruction projects;
- Completed the designs and prepared construction contract documents for the Blarwood and Euclid/Wilson storm drain capital improvement projects;
- Substantially completed construction of 4th Street/Pedernales, Oaklawn and Long Bow storm drain capital improvement projects;
- Prepared designs and construction contract documents using in-house resources for the Rickey Drive, Prince Valiant, and Ashland Circle storm drain improvement projects;
- Completed design and awarded construction contract for a portion of the Ridgelea storm drain improvements that will provided stream bank stabilization along Shoal Creek; and

Reviewed and commented on 14 proposed annexation areas regarding the need for storm drain system improvements.

### 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:

- Achieved the scheduled goals for the design and construction process on the multiple construction packages for the Waller Creek Tunnel project. In FY11, design was completed on the tunnel inlet at Waterloo Park, construction was completed on the LBL pedestrian bridge over Waller Creek and construction continued on the boat house, main tunnel and 4th Street inlet components.
- Completed the buyout of 25 flood-prone properties in the Williamson Creek watershed in the Bayton Loop and Burrough Cove area. The buyout was partially funded with a \$6.2 million FEMA Hazard Mitigation Grant.
- Completed the buyout of 15 mobile home pads from the Woodview Mobile Home Park. The buyout was partially funded by a FEMA grant in the amount of \$877,400.
- Completed nine buyouts in the Onion Creek area. This brings the total number of buyouts to 292 out of a total of 483 properties to be bought out in the project area. The buyouts are proceeding at a slower-than-expected pace due to the lack of federal funding for the project.
- Completed the emergency repair of the Lakewood Drive low water crossing after it was damaged in Tropical Storm Hermine (see photo above). Construction of the upgrades of the Thaxton Lane and Covered Bridge roadway crossings were also completed.
- Began construction of the Hoeke Lane culvert crossing. The design of the upgrade of the David Moore low water crossing is underway. Also just beginning design is a flood mitigation project for the Little Walnut Creek area from Metric to Rutland. A potential bypass culvert is currently proposed and will be further evaluated for feasibility.



- Completed or coordinated 162 reviews for easement releases, license agreements, and right-of-way vacations.

### 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, coordinating that adequate maintenance is performed and prioritizing and implementing needed upgrades or repairs to these facilities. The SPS group:

- Completed construction of the Mearns Meadow, South Metric and Tech Ridge dam modernization projects.
- Began the design of the Comburg and Cougar Run dam modernization projects, and began an evaluation of the Old Lampasas dam, which was damaged by Tropical Storm Hermine. At this time, the Department is evaluating whether the dam should be removed or repaired and upgraded. Design of the Ridge Hollow dam modernization project was completed through 30% but a decision was made not to pursue the project at this time.
- Completed four Emergency Action Plans (EAPs) and streamlined the development of future EAPs by consolidating all plans into one EAP notebook with a standard emergency procedure for all dams.
- Worked diligently with Field Operations to ensure the follow-up maintenance of dams that had been inspected.

### 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, such as the upgrade of the Lakewood Drive low water crossing.

- Collected almost \$2.4 million in RSMP fees and completed the Thaxton Lane low water crossing project in cooperation with Travis County as part of their McKinney Falls Parkway roadway extension.

### Floodplain Management

The purpose of the Floodplain Management activity is to protect lives and property 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 processing floodplain variance requests.

- The group initiated and is progressing toward completion on five floodplain studies, including Shoal Creek, Bull Creek, Carson Creek, Cottonmouth Creek, and Boggy Creek (including Tannehill Branch Creek and Fort Branch Creek) as part of its \$1.1 million Mapping Activity Statement 5 CTP grant from FEMA.
- Completed the 30<sup>th</sup> anniversary of the 1981 Memorial Day Flood. Activities included a social curation website, a press conference, and several media events. A more detailed description of the event is included in the Public Information Office (PIO) section of this document.
- Communicated with the public regarding floodplain information by responding to nearly 900 requests. In addition to this external outreach, the group expanded its outreach to internal stakeholders by

giving presentations to staff in residential review, code compliance, commercial review, and environmental inspection to discuss the floodplain management program. These discussions have been very beneficial in training staff about the floodplain program and about how enforcement of the program is implemented.

- Reviewed compliance with floodplain regulations for approximately 800 development applications, including site plans, subdivisions, and residential building permit applications.

### Flood Early Warning System

The purpose of the Flood Early Warning System (FEWS) is to provide warning of flood hazards to the Office of Emergency Management and to the public to protect lives and property from flood hazards.

- Completed the installation of flashing light warning devices at Old Spicewood Springs Road, Yaupon at Spicewood Springs, Wasson Road, Brodie Lane, Waters Park Road, Adelphi, O'Neil, McNeil, Lakewood Drive, David Moore Drive, Old San Antonio Road, and Dittmar. It was a huge undertaking to purchase, test, and install this equipment. FEWS staff, in conjunction with the CTM-WCSD and Field Operations staff, worked together to complete this important project. The flashing lights allow FEWS to warn the public of flood hazards with automated controls or manual controls.
- The FEWS intranet site for predictive floodplain mapping is fully operational. The group is currently mapping six watersheds through this site (Shoal, Waller, Little Walnut, Buttermilk, Walnut, and Williamson) and is completing other models to add to the site. This process will allow the group to predict the limits of flooding based on predictive rainfall depths, which will decrease response times for flood warnings and evacuations.
- Assisted the Homeland Security and Emergency Management Department in presenting the City's ability to predict and warn for storm events in support of the City's StormReady recertification with the National Weather Service. Austin was recertified as a StormReady community.
- Participated with the Communications and Technology Management Department and the Homeland Security and Emergency Management Department in the City Works Academy. FEWS and WPD PIO headed the group to create a mock Tropical Storm Hermine response. The group received many positive comments on the presentation.

### **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.

- **Austin Water Utility and Watershed Protection Department Service Agreement:** In 1999, WPD finalized a memorandum of understanding with the Austin Water Utility defining procedures for responses to wastewater, potable water, hyper-chlorinated water and lime sludge spills. Since that time, there have been numerous changes in the structure of both departments, expansion of the areas of interaction, and recognition of new areas of concern that necessitate the revision of the original document. PPR staff worked with AWU management to create an up-to-date emergency contact and problem resolution phone list that accurately reflects the current departmental structure and areas of responsibility. PPR staff then developed an updated and expanded version of the Service Agreement that goes beyond the original focus on spill events and covers all areas of environmental interaction between the two departments. The draft is undergoing final review by AWU

- **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 developed 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 finalized all the plan elements (including maps and figures) and scenario-trained the response team on the use of the plan and its procedures. Staff also identified external stakeholders and began educating them on the details of the plan, especially the requirement that the City to respond to spills outside of the City's full-purpose jurisdiction. The spill response plan was presented to the Barton Springs Zone Regional Water Quality Planning Work Group and subsequently to individual stakeholders.
- **Urban Wildfire Environmental Planning, Response and Recovery:** In response to the urban wildfires in Oak Hill, Steiner Ranch, Spicewood, and Bastrop during the summer of 2011, PPR staff began creating a benchmarking document on the environmental effects of urban wildfires. Staff soon realized that WPD could play a significant role in wildfire planning, response and recovery and created a Wildfire Resource Inventory and Response Plan for the Department. This plan identifies WPD's roles and responsibilities as well as expertise and resources that can be provided before, during, and after urban wildfire events. Finally, an interdisciplinary Urban Wildfire Response and Recovery Team has been established within WPD and ERM staff are actively participating in inter-departmental discussions on wildfire prevention, response, and recovery.
- **Coal Tar Ban Enforcement:** PPR staff evaluated 34 freshly sealed lots, resulting in the initiation of two enforcement cases for violation of the ban; one in far north Austin and one in south-central Austin. The south-central Austin case resulted in a warrant being issued for the applicator and the north Austin case resulted in a written admission of guilt that will end with remediation of the lot. Staff assisted AISD in responding to coal-tar related inquiries from the Oak Hill Gazette and participated with them in the development of a paved surface management plan and a strategy for further evaluation of their potentially sealed lots. Staff outreach to NEYRA Plant operators resulted in the placement of signs explaining the City's coal tar ban at the entrance to NEYRA facilities. Standard Operating Procedures for the solvent screening process were finalized. PPR staff answered a number of inquiries about the City's ban from other cities around the U.S. Staff also produced a coal tar product/supplier history document and a coal tar ban chronology dating to the beginning of Austin's efforts to establish the ban.
- **Source Water Assessment:** The PPR section developed the Source Water Assessment and Management Program (SWAMP) to more effectively resolve groundwater complaints received from citizens. It is an interdepartmental, city-wide process for determining if groundwater discharges are associated with natural or man-made sources and to mitigate any associated City responsibilities. PPR staff developed City-wide roles, responsibilities and contact information as well as a plan of action, process flow chart, and mechanism for tracking source water complaints received by WPD. A kick-off meeting was held for the stakeholders attended by representatives of several city departments, including the Austin Water Utility and Public Works.
- **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 and produced a routinely updated data tracking system, as well as a map now used by Planning and Development Review (PDR) staff. This map assists them in determining when to refer sites with potential groundwater issues for our review. In FY11, PPR expanded the scope of the project to include the identification of existing/historic facilities that already have underground structures that may be discharging contaminated groundwater to the City's stormwater conveyance system. Staff chose the downtown area for the initial pilot with the east/west boundaries being IH-35 to Mopac Expressway, and the north/south boundaries being 15<sup>th</sup> Street to Lady Bird Lake. Using a combination of aerial photography and extensive field verification, staff identified 21 existing underground structures in the pilot area actively discharging

groundwater from underground sump systems. Further research is being done to check the proximity of these sump systems to historic groundwater contamination. In FY12, staff will initiate contact with any suspect businesses that may be discharging contaminated groundwater and provide assistance with mitigation of the problem. Staff will also expand the survey area to include all structures north to 35<sup>th</sup> Street and will continue the expansion annually until all of Austin has been surveyed.

- **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. Twenty-eight stormwater discharge inspections of City facilities were conducted (i.e., PARD pools, service centers, 812 landfill, transfer stations, yards, HHW, plants, airport operations) to verify compliance with stormwater regulations. An additional 41 City-owned parcels were also inspected to verify compliance. Staff initially obtained a property list of over 2000 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. Staff also conducted eight 30-minute training presentations on stormwater BMP's to personnel with the City's Fleet Services Department.
- **Public and 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 inspect the City of Austin PARD pools once every three years for compliance. PPR staff last inspected and sampled the pools in summer 2010. On the basis of the information obtained through the inspections, PPR staff developed a prioritized list of swimming pool retrofits to correct non-compliant pool discharges. These recommendations were adopted by PARD and will be incorporated into their pool maintenance and upgrade schedule. PPR staff also initiated a program to inspect the estimated 656 semi-public pools within the city. During FY11, 65 pools were inspected, of which five were found to be illegally discharging to a waterway. PPR staff will continue to inspect approximately 60 semi-public pools each year to ensure compliance.
- **TPDES Compliance:** As part of compliance with the TCEQ's TPDES MS4 Permit, the City of Austin maintains a variety of city-wide pollution prevention programs. PPR staff worked on the development of an inter-local agreement with Travis County to identify specific roles and responsibilities for spill response, routine pollution complaint investigations, and inspection of industrial sites in the City's territorial jurisdiction and part of Travis County's municipal separate storm sewer system. PPR staff also developed a three-year plan to prepare for an audit by the TCEQ that is expected to occur within the next 3-5 years. Staff began an extensive review of the State Comptrollers list (40,000 on the list) for manual conversion of SIC codes to the newly required NAISC codes for TPDES facilities in absence of an automated conversion method. PPR staff developed a tracking and monitoring flow chart for our TPDES inspections process. Staff observed power washing operations done by PW and the DAA and advised on more compliant cleaning practices. PPR staff also evaluated Capital Metro bus stop cleaning and City alleyway flushing activities for compliance with stormwater regulations.

#### 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:

- **Let's Can It!** - continued the anti-litter campaign with financial support from Austin Resource Recovery and promotional support from local non-profit organizations - Keep Austin Beautiful, The Trail Foundation, Colorado River Foundation, Austin Parks Foundation, and Austin Youth River Watch.
- **Austin Underground Films** - Created the Austin Underground Film series and distributed it to Austin ISD high school teachers. The series was also shown during the Reel Paddling Film Festival, before

Austin Parks Foundation Movies in the Park features, on AISD – TV, on Channel 6, and Travis County's Channel 17.

- **Grow Green:**
  - Distributed 263,942 Grow Green Fact Sheets plus 61,670 plant guides and had 238,683 hits on the webpage.
  - Installed native and adapted demonstration gardens at the One Texas Center complete with signage and plant identification tags.
  - Administered a grant from TCEQ focused on reducing pesticide use.
  - Hosted the Green Garden Festival with seven partnering City departments, 15 non-profits agencies, and 1,500 attendees.
- **Storm Drain Marking** – coordinated volunteer efforts that resulted in 1,751 storm drains being marked.
- **Scoop the Poop** – distributed 2,490,000 mutt mitts in partnership with PARD. Partnered with Keep Austin Beautiful during their annual City-wide cleanup - Clean Sweep - to host cleanup sites specifically focused on removal of pet waste.
- **Youth Education** - Watershed Protection Department's youth education program reaches all grade levels of students and provides teacher training through the Groundwater to Gulf Summer Institute and teacher-Led Earth Camp.
  - **Earth Camp and Earth School** - Reached 5,699 AISD fifth graders through Earth Camp and Earth School.
  - **Clean Creek Campus** – 2,458 students participated in two classes plus a service-learning project to re-enforce lessons learned in the classroom.
  - **Hydrofiles** – 466 high school students participated in inquiry-based investigations of Austin's watersheds by monitoring local creeks, evaluating water quality trends, and making informed decisions to improve water quality.
  - **Country Club Ichthyicide** – 361 middle school students dove into a series of lessons to uncover the truth about a historical fish kill that occurred in Austin in 1979.



**Earth Camp / Clean Creek Camp**

### Water Resources Evaluation

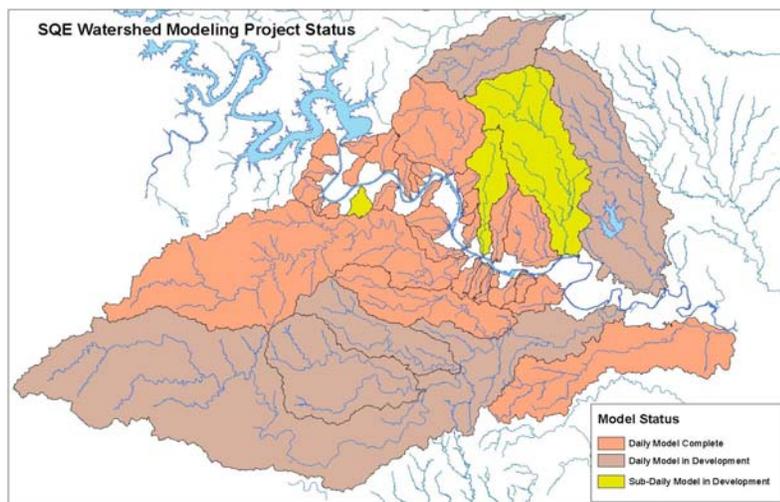
The Water Resource Evaluation (WRE) Section conducts water quality monitoring and assessments in support of the Department's master plan; performs targeted, data-driven environmental studies supporting regulatory and policy revisions; conducts monitoring to ensure TPDES permit compliance; conducts cooperative monitoring with LCRA for the Texas Clean Rivers Program; and implements aquatic habitat and riparian restoration. The section also performs site plan reviews to identify critical environmental features and provides environmental technical assistance for major capital improvement projects. WRE reviews TCEQ, TPDES and TLAP permits with potential impact on Austin water quality. The section provides U.S. Fish and Wildlife Service permit compliance monitoring and management of wild and captive populations of the Barton Springs (*Eurycea sosorum*), and the Austin Blind (*E. waterlooensis*) Salamanders, and population monitoring and management of the Jollyville Plateau (*E. tonkawae*) Salamander. The Austin Blind and Jollyville Plateau salamanders are anticipated to be proposed for listing as endangered during the first half of 2012.

- Continued to work collaboratively with the Barton Springs Edwards Aquifer Conservation District , LCRA, Hays County and other agencies on TCEQ wastewater disposal permitting, including the first requested permit for land application on the Barton Springs recharge zone. Used data from Karst surveys and water balance modeling to guide negotiations.
- Conducted side-by-side monitoring with consultants for the Belterra development pursuant to the 2009 settlement of the contested TPDES permit with the Hays County Water Control District No. 1 Initial monitoring data was used to support for further negotiations with Belterra on revisions to the settlement agreement.
- Initiated an effort to improve management of riparian areas in City parks. Worked with PARD and Law to determine changes necessary to City code for allowing higher mowing heights and with the Department's Field Operations Division to prioritize areas for protection of riparian vegetation, which contribute to healthy aquatic ecosystems and water quality.
- Completed settlement negotiations with City of Burnet to avoid contested case hearing on their proposed wastewater discharge to Lake Travis. Performed water quality modeling to support requests for advanced treatment which was outlined in settlement agreement. Partnered with LCRA on settlement negotiations based on modeling results.
- Reviewed and provided guidance on preliminary engineering reports, design drawings and specifications to protect springs and imperiled salamanders for FY 11 Barton Springs Pool gravel bar removal, FY12 Barton Springs Pool bypass repair, and the Water Treatment Plant 4 Jollyville Transmission Main Projects. For the BSP bypass and gravel removal projects, completed necessary biological assessments and coordination with the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service (USFWS).
- Completed Land Development Code and Environmental Criteria Manual revisions to improve protection of aquatic habitat along Lake Austin shoreline and promote environmentally compatible shoreline access facilities. These changes included prohibitions on vertical bulkheads and requirements for tram construction on Lake Austin.
- Initiated the process for issuance of a new "incidental take" permit for the Barton Springs and Austin Blind salamanders. The process includes development of a new Habitat Conservation Plan that defines measures for protection of endangered salamanders for a proposed 20 year permit term. The process also requires USFWS to conduct an Environmental Assessment of the proposed action (permit renewal) to comply with the requirements of the National Environmental Policy Act.

#### 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:

- Daily SWAT models were started for Phase II watershed. Algorithms for 4 primary BMPs and a sub-hourly version of the SWAT model were completed, SQE staff started developing updated SWAT models for Phase I watersheds using the new model structure.
- Monitored 731 events at 25 stations with a 95% success rate. The number of events was lower than expected due to the lack of rainfall.
- Pond data points were collected at over 500 ponds as part of the DIG project. These will help complete a portion of the DIG project with City staff, saving funds. These points are critical to successfully modeling the urban watersheds and evaluating the impacts on erosion and aquatic life.
- SQE staff worked close with staff at the Lady Bird Johnson Wildflower Center to develop a testing protocol and collect data to help evaluate the effectiveness of green roofs in the Austin area.



#### Austin Brownfields Revitalization Office

The Austin Brownfields Revitalization Office provides resources, incentives, and outreach to the community about recycling land.

- Leveraged \$60,000 from TCEQ and US EPA for assistance on brownfields properties.
- Provided 10 environmental site assessment studies for six brownfields property owners.
- Administered a grant with US EPA for brownfields assessments and cleanup.

The Brownfields Program will be transferred back to the Austin Resource Recovery Department in FY12.

#### Sustainable Stormwater Solutions

Watershed Protection's re-organization resulted in an enhancement to the Stormwater Treatment and Stream Restoration Section. In addition to continued development and implementation of sustainable stream restoration and stormwater treatment technologies and projects, the Green Infrastructure team was added to the new umbrella section called Sustainable Stormwater Solutions. This section focuses the Department's efforts on not only sustainable engineering solutions, but also regulatory approaches, community education opportunities and maintenance practices that allow cost effective implementation of our WPD objectives.

#### 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 function units: water quality, stream restoration, flood mitigation, education, maintenance, policy and planning. The mission of the team is to investigate and maximize the opportunities for using green stormwater infrastructure to reduce flooding and erosion, improve water quality and reduce the use of potable water for landscape irrigation.

The GI Team has expanded and consolidated Austin's previous green infrastructure efforts. In addition to City sponsored stormwater treatment retrofits, updated design criteria and outreach to homeowners and schools, GI team has initiated the following:

- Advanced computer simulation of the effects of large-scale, decentralized green stormwater infrastructure to solve flood and water quality problems in the urban environment;

- Produce a Standard Operating Procedures Manual for Austin GI, informed by benchmarking other cities and Austin's experience;
- Further refining COA development code in order to incent GI and reduce obstacles to its implementation.
- Increase outreach to the private sector design community to encourage design partnerships with neighborhoods and schools.

### **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.

- Stormwater Treatment Construction Projects Completed: Lundelius McDaniels Biofiltration Pond, Final Completion of Brodie Lane Biofiltration Pond and Becker Elementary Rain Garden and RioGrande @ 10<sup>th</sup> Rain Garden



Lundelius-McDaniels Biofiltration Pond in action



Rio Grande @ 10<sup>th</sup> Rain Gardens

- Stream Restoration Design and Construction Projects Completed
  - Capital Improvement Design Projects - Completed design of the Fort Branch Reach 6 & 7 Channel Rehabilitation Project. Anticipate construction start during the fourth quarter of FY12.
  - In-House Design Projects - Completed designs for the following in-house stream restoration projects: Walnut Creek Tributary at Snow Goose Rd Stream Restoration (WLN), Waller Creek at Eastwoods Park Stream Restoration (WLR), Little Walnut Creek Lamar Tributary at 904 N Meadows (LWA), Boggy Creek at 4300 Parkwood Dr Scour Repair (BOG), Shoal Creek Tributary at 8100 Burnet Road Channel Rehabilitation (SHL), Johnson Creek at 2309 W 12th St Channel Rehabilitation (JOH), East Bouldin Creek at Wilson Street Storm Drain Outfall Stabilization (EBO), Shoal Creek Tributary at 6903 Shoal Creek Blvd (SHL).

- Construction Projects Completed:



**Walnut Creek Tributary at Snow Goose Rd Stream Restoration**



**Fort Branch Lott Avenue Channel Rehabilitation**



**Williamson Creek Pack Saddle Pass Tributary Rehabilitation**



**North Fork Tributary of West Bouldin Creek at Manchaca Road Channel Rehabilitation**

### Environmental Remediation and Intergovernmental Affairs

Water Treatment Plant No. 4 Environmental Commissioning (EC): ERM staff were directly involved in the completion of design work for the large tunnel and shafts for the water transmission pipeline. This work resulted in the EC Team determining that the design met the City's environmental protection goals, including protection for the Jollyville Plateau Salamander. ERM staff, including the EC Coordinator,

hydrogeologists, biologists and engineers have been directly involved in oversight of shaft construction to ensure the project continues to meet the City's environment protection goals.

#### Remediation Loop 360 Landfill

Loop 360 Landfill Remediation - The Loop 360 abandoned landfill is located on a steep slope behind the Toys R Us store in the Barton Creek greenbelt south of Barton Creek and east of Loop 360. An investigation of the landfill by a City consultant was completed in 2008 and determined the approximate boundary and depth of the landfill, assessed contaminant levels in the soil and looked for evidence of off-site impacts. Lead and antimony were found in the soil over the landfill and down gradient towards Barton Creek. In 2011, ERM staff completed remediation design, permitting, and bid award to remove all the waste and restore the site consistent with the surrounding greenbelt. Construction is anticipated to start in early 2012 and be completed in late spring 2012. This project will remove a potential source of contamination for Barton Springs and Barton Creek as well as protect the health and safety of greenbelt users.

### **Support Services**

#### Human Resources / Safety Office

The Human Resources 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 FY11, WPD HR/Safety achieved the following:

- Created and implemented a Mother Friendly lactation room at the worksite. Austin/Travis County Health & Human Services has submitted an application to the state to designate One Texas Center as a Mother Friendly Worksite because of our lactation room.
- Planned and assisted Corporate HR with the first Citywide Diversity Management Training Program.
- Water Treatment Plant Four – Worked to coordinate efforts with MWH and subcontractors to establish and maintain processes and procedures that allow for Watershed Protection Department employees to conduct environmental impact assessments during shafting and tunneling operations. The assessments are currently taking place.
- Waller Creek Project - Worked with project manager to develop and integrate a formal safety plan for tunneling and shafting operations during the construction phase. This is currently in place.
- Equipment Training Program- Facilitated equipment training program for the Watershed Protection Department during the first full year of implementation. This program is designed to standardize equipment operations and operator competency that allows for safe operations and reduces risk to the environment and the public while reducing costs and equipment abuse

#### Public Information Office

Public Information (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 FY11, PIO had 233 media contacts for an advertising equivalency of \$630,970, had 504 Public Information Requests, and prepared 19 Customer Assistance Forms. All of these were 100% on time. The WPD Records Analyst reviewed 45 requests for disposition and approved recycling or shredding of estimated 110+ boxes.

The Flood Awareness Campaign incorporated media events throughout the year, including a Flood Awareness Week media campaign and the commemoration of the 30th anniversary of the 1981 Memorial Day Flood that spurred the City to create the Department of Emergency Management, the Flood Early Warning System, and the Drainage Utility Fund. As part of the commemoration, Public Information and Watershed Engineering initiated the City of Austin's first social curation Web site, with assistance from the Corporate Public Information Office. The team asked citizens to submit their memories of the flood to create a Web collection to add to the Austin History Center's archives on this historic storm. The response was overwhelming. Witnesses submitted video testimonials and more than 200 photos and 100 stories. In addition, the media promoted the effort, and more than 20 compelling news stories aired during the week of the 30th anniversary. These stories delivered a critical safety message: while Austin is much more prepared to protect lives and property from flooding now than in 1981, the City is still in the heart of Central Texas' Flash Flood Alley and the threat of flooding remains with us today.

PIO also ran educational radio advertising on flood safety and "Save Yourself! Turn Around – Don't Drown" in English, Spanish and Chinese, held a ribbon cutting for the Lundelius-McDaniels Water Quality Pond and assisted with communications for the Watershed Protection Ordinance Update and the Habitat Conservation Plan Renewal.

The group continued to provide assistance with November 2006 Bond storm drain projects and Watershed Engineering initiatives, as well as facilitated public meetings. Additional activities included presentations for CityWorks Academy and AustinCorps, several exhibits at events, monthly intranet features and updates, and the introduction of Watershed Moments to enhance internal communications.

PIO staff was also active in the Customer Care and Billing communications and the redesign of the City's Web site.

The Records Management initiative has been recognized by the City Clerk's Office as a model for other City departments.

### **Looking Ahead**

As part of the Department's FY13 business planning process, executive management reviewed and updated its horizon issues. These issues are long-term factors that will potentially impact service delivery during the next three to five years. They are detailed in the following pages.



## Horizon Issues Facing the Watershed Protection Department

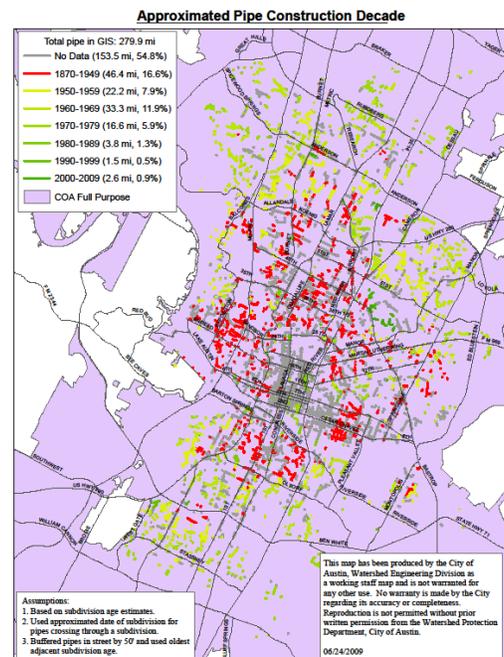
### *Horizon Issues*

Watershed Protection has identified the following four horizon issues that will impact its abilities to deliver its key services effectively and cost efficiently during the next 1-5 years:

***Issue 1: Funding for continued implementation of asset management program for Austin's vast aging and expanding stormwater infrastructure.***

Austin's storm water infrastructure is comprised of approximately 960 miles of storm drain lines, 6,000 commercial ponds, and over 800 residential and City-maintained ponds. These assets help the Department achieve its mission of protecting lives, property and the environment by reducing the impact of flooding, erosion, and water pollution.

The Watershed Engineering Division estimates that more than 140 miles (15%) of the approximately 960 miles of the City's storm drain infrastructure is more than 60 years old. Existing storm water lines in the urban core are a particular source of problems as pipe failures can lead to streets collapsing. Some pipelines have become outdated through changes in design criteria, have exceeded their anticipated service life, and/or become structurally compromised. Most of these lines are also located in Austin's central core and subject to more intense pressure for urban infill development and redevelopment, which may compound problems with pipeline conveyance capacity. Failure of the structural integrity or function of storm water system in any part of the City poses the risk of flooding in the affected area. The Watershed Protection Department was able to replace almost four miles of storm drain infrastructure in FY11 partly due to additional funding from 2006 bond sales. In a typical year, the Department replaces between one and two miles of storm drain infrastructure through in-house and Capital Improvement Program (CIP) activities. At that rate, it will take at





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least 70 to 140 years to repair/replace approximately 15% of our existing storm drain system as the remaining system falls into disrepair.

The Field Operations currently has over 6,000 commercial ponds included in the Department's inventory of commercial ponds that require inspection and enforcement and over 825 residential and "City" ponds that require annual inspections and on-going maintenance. Although this increase has been accommodated by existing staff to date, an increase in staffing levels is necessary to continue to provide the level of service necessary to ensure the continued functionality of these facilities. It is important that this program continue to function at least at a minimal service level, as the activities of this program are utilized for compliance with a state issues storm water permit (TPDES MS4), and a drop in service levels could result in fines and additional scrutiny by both the Texas Commission on Environmental Quality (TCEQ) and the Environmental Protection Agency (EPA).

New erosion problems are arising continuously at the rate of about 5,000 feet per year in addition to the existing miles of eroded stream banks which require stabilization. Moreover, the City has annexed over 10,000 acres in the past five years and the Department has identified just under 1,000 miles of storm water infrastructure in the annexed areas. The Department must provide inspections, operations and maintenance services to these areas and incorporate their stormwater capital improvement needs into its Capital Improvements Program (CIP) project integration process.

The Department has developed a CIP Cost Reduction Plan that will carry forward into FY13. In addition to the recently created Value Engineering activity, the Cost Reduction Plan also includes:

- Expanded use of strategic partnerships with other city departments, other governmental entities, and private entities;
- Evaluation of how CIP projects are phased;
- Development of more rigorous cost estimating procedures and invoice review protocols;
- Improved methodologies for project prioritization, particularly for the localized flood program;
- Review and update of the Drainage Criteria Manual, including consideration of alternative levels of service in built environments watersheds; and



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- Implementation of post project performance reviews to ensure projects are performing as intended and to capture “lessons learned” to guide future project development.

The Watershed Protection Department is also placing greater emphasis on the deployment of “green” or sustainable stormwater management infrastructure to address both drainage and water quality problems. Green stormwater management infrastructure reduces impacts from built environments using relatively small-scale distributed landscape features and engineered systems that mimic natural processes to provide flow-rate attenuation, volume reduction, and water quality improvement. In the “built environment”, green stormwater management infrastructure offers the potential to eliminate or alleviate localized flooding caused by under-sized “grey” infrastructure (i.e., storm drains), reduce creek flooding and erosion, and improve water quality. Deployment of green stormwater management infrastructure also has potential as a strategy to mitigate the impacts of increased impervious cover associated with infill development and re-development.

The Department has recently chartered a multidisciplinary cross-functional team to advance the use of green stormwater management approaches in Austin. The Green Infrastructure Team has four focus areas: technology, regulatory policy, maintenance, and education and outreach.

### *Issue 2: Integrating Department mission needs with Citywide priorities.*

The Watershed Protection Department is challenged with integrating citywide priorities with Department mission needs especially given the limited CIP resources available for yearly appropriation. The Watershed Master Plan has set the Department priorities for the flood, erosion and water quality



missions based on problem scores that assess the condition of Austin’s watersheds. The 2001 Master Plan set a policy of addressing the worst problem areas first, and established a dollar figure of approximately \$1.2 billion to address these high priority needs over a 40 year planning horizon. However, this figure only addresses a portion



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of the City's infrastructure (Phase 1 and a limited part of the Phase 2 watersheds) that is in need of upgrade or replacement. The \$1.2 billion does not address the multitude of priorities that the City is now facing as a whole. Citywide priorities such as Transit Oriented Development, urban rail, the Austin downtown plan, the Waller Creek district, implementation of neighborhood plans, and street resurfacing are examples of citywide projects that all include drainage infrastructure needs that might not align with high priority watershed needs, but still represent legitimate city needs.

A citywide effort has been initiated by the Capital Planning Office to prioritize capital project needs that span multiple departments, with the goal of using our funding wisely and minimizing disruption of services to the public. The Department has, on certain occasions, identified public-private partnerships and cost-sharing opportunities to bring immediate relief to an area. Additionally, staff has worked with developers to treat more off-site storm water runoff and/or construct storm drain systems, whose costs can be reimbursed, or credits given, in order to provide immediate benefits to the neighborhood.

The Watershed Protection Department will be challenged to integrate and provide adequate funding for high priority flood, erosion and water quality problems as well as citywide priorities with limited CIP resources. As in previous years, the Department will continue to innovate ways to get more bang for its CIP buck. In addition to creation of the Value Engineering team (mentioned in prior Horizon Issues publications), WPD will negotiate more partnerships such as the ones mentioned above, to help reduce long term costs and address major citywide and mission-driven issues sooner rather than later. Efforts will also include looking closely at how CIP projects are packaged (including opportunities for phasing), developing stricter cost estimating procedures and invoice review protocols, developing additional methodologies for the prioritization of projects (particularly those in the localized flood activity), and implementing post project performance reviews to ensure projects are performing as intended and provide guidance for future projects via lessons learned information.



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### *Issue 3: Prevention and Control of Water Quality Impacts to Austin Creeks, Lakes Aquifers and Endangered Species.*

**Riparian Zone Protection and Restoration** - Healthy riparian zones (the areas in and along water bodies) are increasingly recognized for the many ecological services that they provide to the community. These include flood hazard mitigation, filtration of pollutants in stormwater, erosion and sediment control, wildlife habitat, and recreational opportunities. Acknowledging these values the Watershed Protection Department is implementing strategies to further protect valuable riparian resources and to restore degraded areas. This includes improved land management and landscape maintenance practices on public lands in and near riparian zones and capital projects for restoration of degraded areas along Austin creeks.

Further progress in protecting and restoring riparian zones is anticipated through a more unified and comprehensive inter-departmental approach to management of Austin's publicly-owned lands (see draft Imagine Austin Comprehensive Plan Priority Action CE Action-18). This will include development and implementation of common maintenance practices for city properties, particularly those properties in or near creeks and implementation of recommendations in the recently completed *City of Austin Invasive Species Management Plan*. Regarding the latter, the Department will be requesting two additional full-time equivalent employees to manage the implementation of the Plan and to facilitate communication and coordination between city departments. It is anticipated that measures for the control of invasive plant species will be integrated into overall landscape maintenance practices, along with other land management priorities (e.g., wildfire prevention, Integrated Pest Management).

**Total Maximum Daily Loads for Impaired Water Bodies** - There are seven stream segments in Austin that are listed on the Texas 303(d) List of Impaired Waters that do not support contact recreation use. The Texas Commission on Environmental Quality (TCEQ) is required by the federal Clean Water Act to address these impairments, and the U.S. Environmental Protection Agency (EPA) guidelines state that impairments should be addressed within 13 years of the initial listing of a stream segment. Some of the affected stream segments within the City's jurisdiction were initially listed 12 years ago. The common practice for addressing water quality impairments is through the development of a Total Maximum Daily Load (TMDL) allocation and accompanying Implementation Plan (IP) for each listed stream segment. If a TMDL is not developed for an impaired stream segment, EPA may dictate modifications to the City's Texas



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Pollutant Discharge Elimination System (TPDES) Municipal Separate Storm Sewer System (MS4) permit to address the impairment. The Watershed Protection Department, in coordination with the Austin Water Utility, will engage proactively with TCEQ TMDL Program staff to initiate development of TMDLs and Implementation Plans with the goal of attaining full compliance with state and federal requirements during FY13.

### **State Permitting of Wastewater Discharges and Effluent Land Application -**

Discharges of treated wastewater to area streams and land application (disposal) of effluent is viewed as a significant potential threat to surface and groundwater quality, particularly within the Barton Springs Zone (BSZ) of the Edwards Aquifer. A cooperative monitoring program with U.S. Geological Survey, the Barton Springs Edwards Aquifer Conservation District, the cities of Austin and Dripping Springs, Hays and Travis counties, and LCRA concluded that sensitive creeks and springs in BSZ, including Barton Springs, may be exhibiting impacts from permitted wastewater facilities in terms of elevated levels of nutrients. As the economy improves and land development activities resume, it is expected that additional wastewater discharge and land application facilities will be proposed.

Wastewater discharges and land application of effluent are regulated by the TCEQ according to state standards. In the past, with technical and scientific support from the Watershed Protection Department, the City of Austin has contested discharge and land application permits and in some cases more protective provisions have been added to the permit. In cooperation with regional partners, TCEQ, and land development interests, the Watershed Protection Department will seek to build consensus and support for TCEQ rule changes to provide greater protection of surface and groundwater quality in the BSZ.

**Environmental Impacts of Transportation Projects -** Major investments in regional transportation facilities are being considered in response to mobility challenges posed by the continued population growth and geographic expansion of the Austin metropolitan area. This includes City of Austin transportation projects, projects in which the City is a financial participant, and projects sponsored by Travis County, the Central Texas Regional Mobility Authority, and/or the Texas Department of Transportation. Major transportation projects, particularly new roadways or major roadway expansions in undeveloped areas, can present significant environmental challenges including threats to water quality and sensitive wildlife habitat. For example, the alignment of the proposed State Highway 45 Southwest traverses the



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catchment area and portions of the subsurface extent of Flint Ridge Cave, which is home to several “species of concern” and is protected under the Balcones Canyonlands Conversation Permit. Management of contaminated stormwater runoff is also a concern with the SH 45 project, given its location in the Barton Springs recharge zone, and is a concern common to many surface transportation projects.

Often, through early engagement in project planning and development, potential environmental impacts associated with transportation projects can be avoided, eliminated, or substantially mitigated. Additionally, a full evaluation of potential environmental impacts, and the associated costs to adequately address those impacts, can be an important consideration in decisions about project alternatives, including a “no build” alternative. Accordingly, the Watershed Protection and Austin Transportation departments have initiated regular proactive collaboration on potential transportation projects. The objective is early identification and full evaluation of potential environmental constraints. The overall goal is to ensure that the City’s policies and priorities for both transportation planning and environmental protection are fully considered and balanced.

**Protection of Federally Protected Endangered Species** - The City of Austin operates and maintains Barton Springs Pool, which is home to the endangered Barton Springs Salamander, in compliance with the terms of the federal Endangered Species Act and an “incidental take” permit from the U.S. Fish and Wildlife Service (USFWS). The 15-year term of the current permit expires in October 2013 by which time the City must obtain a new permit in order to continue the operation of Barton Springs Pool. The Watershed Protection Department in close collaboration with the Parks and Recreation Department is preparing a new Habitat Conservation Plan (HCP), which is required to support issuance of a new permit. The new HCP will include coverage for the Austin Blind Salamander (*Eurycea waterlooensis*) in anticipation of it’s listing by USFWS as an endangered species. Additionally, the new HCP proposes new habitat management and conservation measures, based on data and analysis by WPD biologists, that are intended to improve habitat conditions and salamander populations.

In addition to the expected listing of the Austin Blind Salamander, the USFWS has accelerated its review of the status of the Jollyville Plateau Salamander (*Eurycea tonkawae*). The habitat of the Jollyville Plateau Salamander is found in spring-fed creeks and spring outlets associated with the northern segment of the Edwards Aquifer, which is hydrologically distinct from the Barton Springs Zone. The species is a candidate for federal listing as endangered, primarily due to habitat loss associated



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with development activities and declining water quality. It is anticipated that the U.S. Fish and Wildlife Service will list both the Jollyville Plateau and the Austin Blind Salamanders as endangered during 2013.

### *Issue 4: Prevention of future watershed problems and associated public costs in a rapidly developing city.*

Prevention of future watershed problems and associated public costs in a rapidly developing city is necessary step to managing the drainage infrastructure. The City cannot afford to allow development that perpetuates problems of the past, such as allowing development to continue to be located in erosion hazard zones or areas where the storm drain infrastructure cannot support the current or proposed demand. Development in erosion hazard zones results in a long term cost to the City of millions of dollars when infrastructure has to be relocated, or homes have to be purchased because of threats to lives and property. Additionally, the continued economic growth throughout the City of Austin will continue to create a demand to improve the storm drainage infrastructure in order to reduce existing localized flooding concerns or prevent an increase in localized flooding situations. To ensure healthy growth, the City of Austin must find a way to allow development in the desired development zone, while developing regulations that help prevent future problems and minimize public costs. Opportunities to include infrastructure upgrades in this zone and to implement a financial mechanism to help fund those upgrades should be further explored.

The adoption of Low Impact Development (LID) strategies for new “greenfield” development, as well as for infill development and re-development, offers great potential for prevention of future watershed problems across all three of the Department’s missions. The basic principle underlying LID is to mimic nature by managing rainfall at the source using landscape features and distributed small-scale stormwater controls. The goal is to preserve pre-development hydrology of a site through infiltration, filtration, storage, evaporation, and detention of runoff close to its source. One focus of the Department’s Green Infrastructure Team (see Issue1) is to examine current City land development policies to identify potential impediments to LID and use of green stormwater management infrastructure and to identify changes in policy to eliminate unnecessary impediments or to provide incentives for LID and green infrastructure.