BALCONES CANYONLANDS CONSERVATION PLAN

Annual Report
FY 2007

Background

On May 2, 1996, the City of Austin and Travis County were jointly issued an U.S. Fish and Wildlife Service (USFWS) regional permit referred to as the Balcones Canyonlands Conservation Plan (BCCP). This permit allows "incidental take" of eight locally occurring endangered species in compliance with Section 10(a)1(b) of the Endangered Species Act (U. S. Department of the Interior, Fish and Wildlife Service, 1996a). The thirty-year permit covers approximately 561,000 acres in western Travis County identified in the Habitat Conservation Plan and Final Environmental Impact Statement (HCP) (U. S. Department of the Interior, Fish and Wildlife Service, 1996b). The permit also covers incidental take of 27 species of concern should any become listed as threatened or endangered during the life of the permit (see Table 1).

Permit Requirements

The City of Austin and Travis County (the Permit Holders) are required to assemble and manage 30,428 acres of suitable habitat for the golden-cheeked warbler and the black-capped vireo and to protect and manage populations of canyon mock orange and Texabama croton. The Permit Holders are also to acquire and manage or ensure protection through management agreements on 35 karst features supporting populations of six endangered invertebrates and 27 features known to harbor 25 species of concern. This system of managed and protected habitats is known as the Balcones Canyonlands Preserve (BCP). The locations of habitat areas and specific karst features proposed for protection are delineated in the HCP (U. S. Department of the Interior, Fish and Wildlife Service, 1996b).

Agencies or organizations entering into formal agreements with the Permit Holders to manage designated preserve lands in accordance with the BCCP are considered Managing Partners. At this time, the sole BCP Managing Partner is the Lower Colorado River Authority (LCRA), which manages 2,707 acres as a portion of the preserve system. As a Managing Partner, LCRA may mitigate for capital improvement and infrastructure development projects through the mitigation credit system established by the BCCP.

Table 1. Species covered by the BCCP.

Common name	Scientific name	Status
Black-capped vireo	*Vireo atricapilla*	Endangered
Golden-cheeked warbler	*Dendroica chrysoparia*	Endangered
Tooth Cave pseudoscorpion	*Tartarocreagris texana*	Endangered
Tooth Cave spider	*Neoleptoneta myopica*	Endangered
Bee Creek harvestman	*Texella reddelli*	Endangered
Bone Cave harvestman	*Texella reyesi*	Endangered
Tooth Cave ground beetle	*Rhadine persephone*	Endangered
Kretschmarr Cave mold beetle	*Texamaurops reddelli*	Endangered
Canyon mock-orange	*Philadelphus ernestii*	Species of Concern
Texabama croton	*Croton alabamensis*	Species of Concern
Flatworm	*Sphalloplana mohri*	Species of Concern
Ostracod	*Candona* sp. nr. *stagnalis*	Species of Concern
Isopod	*Caecidotea reddelli*	Species of Concern
Isopod	*Trichoniscinae* n. s.	Species of Concern
Isopod	*Miktoniscus* n. s.	Species of Concern
Spider	*Cicurina wartoni*	Species of Concern
Spider	*Cicurina ellioti*	Species of Concern
Spider	*Cicurina bandida*	Species of Concern
Spider	*Cicurina reddelli*	Species of Concern
Spider	*Cicurina reyesi*	Species of Concern
Spider	*Cicurina cueva*	Species of Concern
Spider	*Cicurina travisae*	Species of Concern
Spider	*Neoleptoneta cocinna*	Species of Concern
Spider	*Neoleptoneta devia*	Species of Concern
Spider	*Eidmannella reclusa*	Species of Concern
Pseudoscorpion	*Aphrastochthonius* n. s.	Species of Concern
Pseudoscorpion	*Tartarocreagris reddelli*	Species of Concern
Pseudoscorpion	*Tartarocreagris intermedia*	Species of Concern
Pseudoscorpion	*Tartarocreagris* n. s. 3	Species of Concern
Harvestman	*Texella spinoperca*	Species of Concern
New Comanche Trail Cave Harvestman	*Texella comanche*	Species of Concern
Millipede	*Speodesmus* n. s.	Species of Concern
Ground beetle	*Rhadine s. subterranea*	Species of Concern
Ground beetle	*Rhadine s.mitchelli*	Species of Concern
Ground beetle	*Rhadine austinica*	Species of Concern

The Nature Conservancy of Texas (TNCTX) and the Travis Audubon Society (TAS) also manage lands for public and environmental benefit within the Preserve. These organizations are not considered Managing Partners, however, as no formal agreements with the Permit Holders have been finalized. In FY2003, the City of Lakeway accepted

management obligations for the 498-acre Schramm Ranch tract, portions of which are set aside as mitigation under USFWS 10(a) permit number PRT-812695 (U. S. Department of the Interior, Fish and Wildlife Service, 1998). The City of Lakeway submits an annual report to the USFWS in conjunction with the BCCP Partners, and this document is attached herein as an appendix. A number of private landowners also manage habitat within the USFWS delineated proposed preserve boundaries, often as required under individually issued Section 10(a) permits. These landowners are responsible for reporting in accordance with the terms and conditions of their individual permits directly to the USFWS, and these reports are not incorporated into this Annual Report. The Permit Holders cooperate with these entities and private landowners to address species and land management concerns common to all BCP properties.

The City of Austin operates the BCCP Capital Improvement/Infrastructure Development Mitigation Process, and Travis County administers the BCCP Public Participation Process that addresses the mitigation needs of agencies and landowners under the terms of the Permit. The BCCP provides a voluntary, streamlined alternative for agencies and landowners seeking to comply with the Endangered Species Act (the Act). Those participating through the BCCP have met their obligations under the Act and may proceed with development under the terms of Participation Agreements. Those choosing not to participate may comply with the Endangered Species Act by obtaining an individual 10(a) permit from the U. S. Fish and Wildlife Service.

The Permit further requires that the Permit Holders submit an annual report that provides:

- an annual summary of development activities within the Permit area
- an annual list of tracts for which Participation Certificates were issued
- the amount of funds collected through Participation Certificate and USFWS directed mitigation fees
- the amount of funds expended for land acquisition
- the amount of funds expended for Preserve operations and maintenance
- an updated map of Preserve lands
- a summary of public use and habitat management activities within the Preserve, and
- copies of all research and investigation reports prepared within the last fiscal year.
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Development Activity within the Permit Area

The City of Austin development activity report for FY2007 detailing a compilation of Development Permits issued within the City's jurisdiction of the Permit area is attached as Appendix A.

A summary of development permits issued by the Travis County Permitting office within the Permit area in FY2007 is attached as Appendix B.

Table 2. Infrastructure projects mitigated through the use of mitigation credits during FY2007 by participating agency.

City of Austin	
Starting City of Austin Balance	11,542.55 acres
New preserve additions (credits)	10.0
Remaining Mitigation Credits	*11,552.55 acres*
Travis County	
Starting Travis County Balance	2,684.0 acres
New preserve additions (credits)	54.0
Improvements to 3.5 miles of Reimers-Peacock Road	1.9
Remaining Mitigation Credits	*2736.1 acres*
Lower Colorado River Authority (LCRA)	
Starting LCRA Balance	2506.6 acres
TbarM Amphitheater Roof	0.1
Lakeway Austin Energy (AEN) Substation Upgrade	1.2
Glenlake Water System Improvements	0.5
Calcasieu Point Dump Site Cleanup	0.3
Bee Creek Substation	8.7
Gloster Bend Recreation Area – Entrance Complex	0.4
Remaining Mitigation Credits	2,495.4

Mitigation Credit Balance

The City of Austin's Balcones Canyonlands Preserve staff administers the Capital Improvement and Infrastructure Development Project mitigation credit system on behalf of the BCCP Coordinating Committee. The mitigation needs of the Permit Holders and the Managing Partner for these projects are provided under the terms of the regional Permit. Mitigation credits are issued at a rate equal to the number of acres within the Preserve system managed under the terms and conditions of the Permit and the HCP/FEIS (U. S. Department of the Interior, Fish and Wildlife Service, 1996b). Capital improvement and infrastructure development mitigation needs are subtracted from this accumulated "bank" of credits at a rate of one acre of credit per acre of habitat impact; regardless of habitat zone (see Table 2).

Participation Certificate Activity

Travis County's Natural Resources Department administers the BCCP Public Participation Process on behalf of the BCCP Coordinating Committee and issues Participation Certificates for cooperating landowners within the Permit area. Descriptions of participation categories are defined in the Interlocal Cooperation Agreement between Travis County and the City of Austin Implementing the Balcones Canyonlands Conservation Plan Shared Vision (City of Austin and Travis County, 1995). As required by the terms of the regional Permit, copies of each Participation Certificate and Habitat Determination map are provided to USFWS Austin Ecological Services office. Over the past year, twenty Participation Certificates were issued (Table 3), four for commercial use, thirteen for subdivisions, one under the City of Austin managed Infrastructure process, and two under the USFWS Alternative Determination Process.

Table 3. FY 2007 Participation Certificate summary.

Application #	Date	Name	Category	Amount Paid
#0534	10/10/06	Texas Gas Service	Infrastructure	$2,125.00
#0538	11/16/06	Prominent Northpoint, LP	Commercial	$12,950.00
#0542	02/05/07	Grimm	Subdivision	$5,950.00
#0543	02/14/07	McComb	Commercial	$2,800.00
#0516	02/15/07	Omni Joint Venture	Subdivision	$31,500.00
#0245-B-3	02/21/07	Steiner Ranch	Alt. Determination	$221,600.00
#0561	04/13/07	Long (Spanish Oaks)	Subdivision	$91,350.00
#0544	04/25/07	Kleeman	Subdivision	$113,925.00
#0557	04/30/07	Silverton Custom Homes, Inc.	Subdivision	$3,500.00
#0545	05/02/07	Lake Travis Ranch, LLC	Subdivision	$1,575,875.00
#0541	06/12/07	8825 Bee Caves Rd LP (JMT Development)	Commercial	$28,700.00
#0568	06/12/07	King	Commercial	$3,300.00
#0509	06/19/07	Dow	Alt. Determination	$3,000.00
#0562	06/25/07	Long (Spanish Oaks)	Subdivision	$30,450.00
#0548	07/03/07	Lake Travis Ranch, LLC	Subdivision	$262,850.00
#0552	07/09/07	JH West Land Ventures, Ltd.	Subdivision	$597,625.00
#0576	07/12/07	The Reserve at Lake Travis	Subdivision	$249,725.00
#0571	07/18/07	Hagman	Subdivision	$56,525.00
#0577	08/24/07	Weigand (Waterford Sec 7)	Subdivision	$89,400.00
#0581	09/07/07	McAden	Subdivision	$54,000.00

Funds Collected through Participation Certificate and USFWS directed mitigation fees

A total of $3,437,150.00 was collected through the sale of Participation Certificates in FY2007. These funds are disbursed between the Permit Holders on a quarterly basis. One directed mitigation payment in the amount of $1,500.00 was received for the Brown tract on City Park Road in accordance with the landowner's USFWS 10 (a)1(b) permit.

Travis County's Tax Benefit Financing Plan, a funding mechanism outlined in the Interlocal Cooperation Agreement between Travis County and the City of Austin Implementing the Balcones Canyonlands Conservation Plan Shared Vision (City of Austin and Travis County, 1995) generated $5,919,530 in FY2007. Travis County Commissioners Court directed these funds to support County Preserve land purchases until the land acquisition goals established by the permit have been achieved.

Funds Expended for Land Acquisition

Since the inception of the BCCP, the Permit Holders have successfully competed for USFWS Habitat Conservation Plan grants each year. To date, ten Land Acquisition Assistance Program awards totaling $71,691,745 have been completed or are in progress

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Table 4. USFWS HCP Land Acquisition Grant awards received by the Permit Holders.

Year	Federal Grant Funds	Minimum Local Match (25%)	Total Grant	Local Recipient
1997	$1,000,000	$333,333	$1,333,333	City of Austin
1998	$2,000,000	$666,666	$2,666,666	Travis County
1999	$1,500,000	$500,000	$2,000,000	Travis County
2000	$4,140,000	$1,380,000	$5,520,000	Travis County
2001	$14,140,000	$4,713,333	$18,853,333	City of Austin, Travis County
2002	$10,000,000	$3,333,333	$13,333,333	Travis County
2003	$4,993,794	$1,647,952	$6,641,746	Travis County
2004	$3,375,000	$1,125,000	$4,500,000	Travis County
2005	$6,890,000	$2,296,667	$9,186,667	Travis County
2007	$5,742,500	$1,914,167	$7,656,667	Travis County
Total	**$53,781,294**	**$17,910,410**	**$71,691,745**	

Travis County expended a total of $1,995,028 on land acquisition activities in FY2007. These expenditures are broken down by tract in Table 5.

In addition to fee simple acquisitions, Travis County actively pursues alternative protection strategies such as conservation easements and deed transfers. Use of these non-traditional measures provides opportunities to secure in-perpetuity protection for habitat lands that may not otherwise be available for fee simple purchase. Approximately 250 acres were secured through these non-grant funded protection strategies in FY07.

Travis County continues to pursue fee simple purchases as well as alternatives such as conservation easements, deed transfers, and other land protection strategies to meet the goals established by the Permit.

The City of Austin owns and manages 13,360 acres of land within the Balcones Canyonlands Preserve.

Table 5. Travis County FY2007 BCP Land Acquisitions.

Tract	Date Acquired	Acreage	Total Expenditures*
Concordia University *Conservation Easement Donation*		250.0	$0
Snowden *Fee Simple Purchase*		54.0	$1,506,726
Totals		**304.0**	**$1,506,726**

* Total Expenditures includes land and associated acquisition costs (surveys, environmental site assessments, etc.)

Funds Expended for Operations and Maintenance

The City of Austin spent a total of $1,080,939 for FY07 to fund preserve management expenditures by the Austin Water Utility's Wildland Conservation Division, Balcones Canyonlands Preserve Program. This figure understates the City's total expenditures on this program since it does not include (1) work by other staff in the AWU's Wildland Conservation Division on program administration and support; (2) operation and maintenance expenditures by Austin Park and Recreation Department Operations on

BCP-designated parkland; or (3) land management expenditures by the Austin Water Utility on the two BCP-designated tracts that it owns and manages. Those expenditures cannot be readily determined from their program budgets.

The Travis County Natural Resources budget for the BCP Program in FY2007 was $603,146. This includes Travis County General Fund expenditures as well as developer funds negotiated to support ongoing operations and maintenance of County managed Conservation Easements. Note that this figure does not include expenditures by the Committee for Wild Basin Wilderness, Inc., which holds a contract to conduct educational programming and management of the County owned Wild Basin Wilderness Preserve. This total also does not include administrative, legal, and additional law enforcement support or non-habitat-related operations and maintenance provided by other Travis County Departments.

Table 6. Annual FY2006 and FY2007 BCP budgets for Permit Holders, the Managing Partner, and cooperating entities with summary of total budgets since plan inception.

BCP Partner	FY2006	FY2007	Total Budget: 1996 to Present
City of Austin	$683,353	$1,080,939	$6,530,437
Travis County	$763,313	$603,146	$4,678,220
LCRA	$85,000	$85,000	$1,038,072
TNCTX	$20,000	$20,000	$902,000
TAS	$59,930	$29,700	$171,601
TOTALS	**$1,611,596**	**$1,818,785**	**$13,320,330**

Updated Map of Lands Dedicated to the Balcones Canyonlands Preserve

With the addition in FY2007 of 176 acres to the Preserve, 27,927 of the 30,428 acres of black-capped vireo and golden-cheeked warbler habitat required by the Permit (92%) have been assembled by the Permit Holders with the assistance of cooperating landowners and entities. In addition, Travis County and the City of Austin acquired management responsibilities for 565 acres within the Preserve that had previously been managed by private landowners or other entities thereby ensuring long-term protection of these habitat lands. A map illustrating the current status of the Balcones Canyonlands Preserve is enclosed as Appendix C. Summaries of BCP lands sorted by managing entity and by macrosite are attached as Appendices D and E, respectively.

Public Use and Habitat Management Activities occurring within the Balcones Canyonlands Preserve

The City of Austin

The Austin Water Utility (AWU) Wildland Conservation Division (WCD) staff has responsibility for management, habitat restoration, removal of threats to the habitat and inventory of existing species within the city's 13,360-acre portion of the BCP. Five biologists assigned to the WCD provide monitoring, surveying, and land management functions for the City's BCP Program. WCD staff coordinates volunteer activities and provide maintenance and administrative support.

WCD currently manages 10,177 acres of the BCP and assists PARD Park Operations on the other 3,183 acres of designated parks and Preserves (See Table 7).

UPPER BULL CREEK

Staff conducted three white-tailed deer census counts on a 5-mile census route on a portion of the Upper Bull Creek Unit (Canyon Creek, Franklin, Lanier, WTP#4 tracts) in August and September of 2007, with an average survey count of one deer per 26.4 acres. The neighborhood immediately north of the preserve was found to have a deer density of one deer per 2.2 acres (many of the deer appear to exit the preserve at night and browse on plants in the neighborhood). Thirty-seven white-tailed deer were culled along with about 100 feral hogs.

Table 7. Management Status of City of Austin BCP Properties

Tract	Primary Management Responsibility	Acreage
Upper Bull Creek Unit (Franklin, Hanks, Lanier, COA Canyon Creek)	AWU/BCP BCP/PARD (Franklin)	823
Middle Bull Creek Unit (Ivanhoe, Beard Trust)	AWU/ BCP	996
Lower Bull Creek Unit (St. Edward's Park, Jester, Forest Ridge, 3M, Hilltop, Gibson/Nott, Hiller, Kruger)	AWU/BCP	1140
Lime Creek (inc. 100 acres of Austin-Simon, Ltd.)	AWU/BCP	594
Park West, Coldwater I & II, Long Canyon	AWU/BCP	1345
Cortaña	AWU/BCP	1752
Double J&T	AWU/BCP	1729
Reicher Ranch	AWU/BCP/PARD	813
Bohls Ranch	AWU/BCP	450
Bohls II	AWU/BCP/TNC	17
Sansom	AWU/BCP	13
Senna Hills	AWU/BCP	35
Schramm Ranch	AWU/BCP	100
Vireo Research Area	AWU/BCP/PARD	214
Ullrich Water Treatment Plant	AWU/BCP	18
Water Treatment Plant #4	AWU/BCP	138
	AWU/BCP Subtotal	**10,177**
Bull Creek District Park, Barton Creek Greenbelt	PARD Operations*	25
Spicewood Springs Preserve	PARD Operations	8
Barrow Preserve	PARD Operations	8
Emma Long Metro Park	PARD Operations	950
Commons Ford Park	PARD Operations	115
Barton Creek Wilderness	PARD Operations	999
Barton Creek Greenbelt	PARD Operations	813
Friesenhahn	PARD Operations	62
Mt. Bonnell	PARD Operations	3
	Other City of Austin Subtotal	**3,183**
	TOTAL ACREAGE	**13,360**

*****PARD Operations does not manage for Endangered Species; they perform regular maintenance, i.e. mowing, trash pickup, and some trail management activities. AWU BCP staff provides BCP management activities.

Canyon Creek

Illegal trespass from Canyon Creek development remains an ongoing problem. The primary trespass routes appear to come from the adjacent Canyon Creek conservation easements. Management activities for this tract during FY 06-07 included:

- Mapping of Golden-cheeked Warbler territories on a 100-acre transitional study plot, and enumerations of Golden-cheeked Warbler territories on the remainder of the tract (City of Austin 2007 Golden-cheeked Warbler report).
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Issuing warning letters to trespassers.
- Search and rescue teams conducted a massive search on this tract and other upper Bull Creek tracts for a missing person, eventually that person was found wandering off of the preserve.
- Maintenance of interior roads for vehicle clearance.
- Erosion control efforts.
- Trash removal.
- Repair of perimeter fence and gates damaged by unauthorized trespass.
- In May, the City of Austin took over ownership and management of 3 Canyon Creek MUD properties totaling 215 acres. These properties are immediately adjacent to existing City preserve properties. Once these properties were surveyed, City staff immediately installed gates and fences to secure these properties from trespass and vandalism.
- Met with adjacent preserve and property managers (Travis County and Concordia College) regarding trespass and vandalism issues, worked on a collaborative solutions to the problems.
- Met with adjacent representatives of a proposed new retirement community regarding encroachment issues, the property owner agreed to mitigation measures.
- Installation of a new hog pen trap.
- Trapping and removal of feral hogs with the assistance of volunteers.
- Trapping of Brown-headed Cowbirds with the assistance of volunteers. All the birds were given to the UT Neuroscience lab for research relating to how birds migrate/ brain activity. After research was complete, all birds were humanely euthanized.
- Aerial reconnaissance for oak wilt: no new oak wilt observed. Continued monitoring of existing OW centers.

Franklin

Key management activities were:

- Trapping of feral hogs.
- Sedimentation and erosion work along Bull Creek.
- Routine patrols of main roads and perimeter fencing to look for signs of trespassing, vandalism or illicit dumping.
- Culling of deer under the Texas Parks and Wildlife Department (TPWD) Level 2 Managed Lands Deer Permit (MLDP). The harvested meat was donated to the Capital Area Food Bank.
- Captured and removed "escaped" cattle from adjacent private property.
- Maintenance of existing stands and feeders for the deer management program.
- Repair of vandalized perimeter fence and flood-damaged deer exclosures.
- Continued to monitor and enhance the Cistern Spring/Jollyville Plateau salamander habitat restoration project, on average 2 to 3 salamanders continue to be observed.
- Seed collection from locally rare, spring-associated plants, subsequently sowed at the newly-protected Cistern Spring fenced area.
- Repair of access roads.
- Trash removal.
- Removal of non-native invasive vegetation.
- Monthly surface count monitoring for the Jollyville Plateau salamander, from January-October. Cancelled May and August surveys due to rain.
- Enumeration and mapping of Golden-cheeked Warbler territories. (See City of Austin 2007 Golden-cheeked Warbler Report).
- Installation of new deer exclosures around hardwood saplings for Golden-cheeked Warbler habitat restoration.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

Hanks and Gardens at Bull Creek

A portion of the Hanks tract was involved in the construction of a regional flood retention facility on the adjoining Gardens of Bull Creek (GBC) property (To date, the GBC property's acreage is not counted toward the BCP total, but is managed as BCP land). Management activities for these tracts included:

- Routine patrol of the area for evidence of trespass and preserve damage.
- Monitoring of the health of 229 trees that were planted in November 2000, and maintenance as necessary.

- Planting large numbers of seeds including: live oak, red oak, red mulberry, Arizona walnut, Carolina basswood, *Amorpha roemeriana*, and *Viburnum rufidulum* as well as other species to aid Golden-cheeked Warbler habitat restoration.
- Trash removal.
- Repair of an access road by removing fallen trees.
- Repair of vandalized perimeter fence and deer exclosure.
- Repair of fences, gates and floodgates damaged by floodwaters.
- Posting of new perimeter signs and repair of vandalized signs.
- Monitoring of hardwood saplings that had been planted in previous years by Boy Scout troops within a deer exclosure.
- Seeding of eroded areas with native grasses.
- Collecting seed for spring restoration project.
- Documentation of erosion and sedimentation problems from adjacent development that is adversely affecting Bull Creek water quality as well as Jollyville Plateau salamander habitat. Staff reported all erosion problems associated with the adjacent development to the City of Austin's environmental inspectors. Remediation was enacted as required by City code.
- Investigated massive algal bloom, took photo points and looked at a possible sewer line leak (none detected).
- Feral hog trapping.
- Enumeration and mapping of Golden-cheeked Warbler territories (See City of Austin 2007 Golden-cheeked Warbler Report).
- Removal of non-native invasive vegetation.
- Aerial reconnaissance for oak wilt: no new oak wilt observed. Continued monitoring of existing OW centers. Removed 3 infected red oaks.

Lanier

Management activities included:

- Enumeration and mapping of Golden-cheeked Warbler territories (See City of Austin 2007 Golden-cheeked Warbler Report).
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Fence repair, including flood-damaged deer exclosure.
- Removal of cattle. Cattle from the adjacent Ribelin Ranch entered the Lanier tract through a break in the fence.

- Repair of flood damage to Lanier spring by removing massive amounts of flood debris and sediment.
- Initiation of monthly mark-recapture surveys for the Jollyville Plateau salamander from March-October at Lanier Spring and from April-July at a 90-foot riffle above the confluence of Bull Creek main stem and Tributary 8.
- Culling of deer under the TPWD Level 2 MLDP. The harvested meat was donated to the Capital Area Food Bank.
- Maintenance of existing stands and feeders for the deer management program.
- Removal of feral hogs.
- Removal of non-native invasive vegetation.
- Maintenance of interior roads for vehicle clearance.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

WTP 4

Management activities included:

- Mapping of Golden-cheeked Warbler territories (City of Austin 2007 Golden-cheeked Warbler Report).
- Monitoring of salamanders at Moss Gully spring.
- Monthly monitoring of salamanders in the main branch of Bull Creek at and above the low water crossing to the southwest fence line, from January-October. May and August surveys cancelled due to rain.
- Worked with the City's Watershed Protection and Development Review Department (WPDRD) staff on measures and a plan to restore flow to Moss Gully spring.
- Participation in discussions on methods to minimize the potential damage the future water treatment plant may have on the BCP.
- BCP staff answered citizen inquiries regarding potential negative impacts the proposed WTP will have on the BCP.
- Bait trapping of karst features found 2 new sites for the endangered *Rhadine persephone*.
- Assisting WPDRD staff acquire baseline data on the main branch of Bull Creek and associated springs prior to the construction of a new water treatment plant.
- Repair of perimeter fence and floodgates from recent flood damage to prevent entry of feral hogs and deer.

- Worked on Golden-cheeked Warbler habitat mitigation plan including seeding, planting, deer removal and hog removal. This plan was in part, mitigation for planned warbler habitat removal for the proposed water treatment plant.
- Collected seed for habitat restoration (including shipping seed to the Texas Forest Service) for propagation as part of the restoration plan.
- Repair of existing well and house in preparation for watering newly planted trees.
- Sedimentation and erosion control work.
- Trash removal.
- Removal of non-native invasive vegetation.
- Operation of hog traps and a hog pen trap.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

MIDDLE BULL CREEK

Ivanhoe

Management activities included the following:

- Mapping of Golden-cheeked Warbler territories on a 100-acre prime study plot, and enumerations of Golden-cheeked Warbler territories on the remainder of the tract (City of Austin 2007 Golden-cheeked Warbler report).
- Operation of feral hog traps manned by staff and volunteers.
- Maintaining and operating a Brown-headed Cowbird trap, with the assistance of volunteers. All the birds were given to the UT Neuroscience lab for research relating on how birds migrate/brain activity. After research was complete all birds were humanely euthanized
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Erosion repair on access road.
- Repair of a vandalized gate.
- Inspection of Austin Energy and Lower Colorado River Authority line-clearing activities. Staff is working with LCRA to fulfill their mitigation requirements for the damage to vegetation.
- Removal of non-native invasive vegetation.
- Trash removal.
- Monitoring of the rare canyon-mock orange (*Philadelphus ernestii*).
- The “Rancho LaValencia” developer was found to be in violation of an agreement with the City for mitigation and remediation of disturbed preserve property, the City filed a lawsuit in an attempt to recover damages.

- Worked with WPDRD staff on measures to be implemented by the near adjacent Ribelin Ranch development including setbacks and fencing requirements that will benefit the preserve.
- Investigated Texas Department of Transportation's (TXDOT) proposed new road widening of FM2222 and how much preserve property would be impacted.
- Documentation of several instances of siltation and erosion originating on the Canyon Ridge development. WPDRD environmental inspectors negotiated agreements with the developer to reduce these ongoing problems.
- Biannual monitoring of Beard Ranch Cave for visible signs of vandalism and infestations of red imported fire ants. No problems were noted (City of Austin 2007 Karst Report).
- Contracted out to map the interior of Beard Ranch Cave.
- With the help of volunteers, discovered a new cave, excavated the cave for access, mapped the interior the cave named "Pond Party Pit" and collected a pseudoscorpion that was sent to a specialist for species ID.
- Aerial reconnaissance for oak wilt: no oak wilt observed.
- Research conducted by Baylor University for the implementation of a fire modeling system for central Texas' wildland urban interface.

Beard Family Trust

Management activities for this tract included:

- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Sedimentation and erosion control work.
- Surveyed the boundary between Beard and the new Canyon Ridge development.
- Installation of a new perimeter fence between this tract and the Canyon Ridge development.
- Repair of perimeter fences.
- Documentation of several instances of siltation and erosion originating on the Canyon Ridge development. WPDRD environmental inspectors negotiated agreements with the developer to reduce these ongoing problems.
- Removal of non-native invasive vegetation.
- Installed new a new hog pen trap and other hog traps that were manned by volunteers and staff.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

LOWER BULL CREEK

Forest Ridge, Hilltop, Hiller, and Gibson/Nott

Management activities on these tracts included:

- Trail maintenance on lower Bull Creek trail with help from American Youth Works. Highlights included repairing the Bull Creek trail, erosion control work, installing wood fencing at the lower end of Bull Creek trail, and various improvements to steps and switchbacks.
- Mapping of Golden-cheeked Warbler territories on a 100-acre prime study plot, and enumerations of Golden-cheeked Warbler territories on the remainder of the Forest Ridge tract (City of Austin 2007 Golden-cheeked Warbler report).
- Study of bird diversity along the Bull Creek trail.
- Leading six tours for 2007 Bull Creek Preserve entry permit holders.
- Cave cricket exit counts at Jest John cave.
- Routine fence repair and maintenance.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Removal of a dump. Trash removal.
- Removal of non-native invasive vegetation.
- Installed a new trail head kiosk with trail map.

Jester

Public access has been allowed on a portion of this tract; however, dodgeways have been installed to curtail prohibited mountain bike and horse use of this area. Other management activities have included:

- Enumeration and mapping of Golden-cheeked Warbler territories (See City of Austin 2007 Golden-cheeked Warbler Report).
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Repaired entry signs/kiosk.
- Repair of the perimeter fence on numerous occasions. Staff filed police reports on these activities.
- Removal of non-native invasive vegetation.
- Inspection of Jester Pit.
- Monitoring of problem animals: deer, feral hogs, and cowbirds.

- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.
- Trail maintenance.
- Trash removal.
- Inaugural native plant education and seedling distribution event held in Jester Estates neighborhood, with focus on woody plant species found in Golden-cheeked Warbler habitat.
- Research conducted by Baylor University for the implementation of a fire modeling system for central Texas' wildland urban interface.

St. Edwards, 3M and Krueger

Management activities on these tracts included:

- Mapping of Golden-cheeked Warbler territories on a 100-acre prime study plot, and enumerations of Golden-cheeked Warbler territories elsewhere on these tracts. (See City of Austin 2007 Golden-cheeked Warbler report.)
- Trail maintenance at St. Edwards Park: removing debris and closing illegal trails.
- Maintenance of interior roads for vehicle clearance.
- Continued monitoring of LCRA re-seeding project beneath a power line on 3M.
- Aerial reconnaissance for oak wilt: no oak wilt observed.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Trash removal.
- Routine fence repair and maintenance.
- Removal of non-native invasive vegetation.
- LCRA modification of 3M entrance and gate.

CYPRESS CREEK UNIT

Lime Creek

Management activities for this tract included:

- Continued monitoring of restoration work by Travis County for mitigation from the
- Lime Creek Road re-alignment.
- Monitoring: Lime Creek has two caves, which harbor endangered karst species. The areas around these caves were inspected for signs of vandalism and infestation of red imported fire ants. No signs of vandalism or fire ants were found. (City of Austin 2007 Karst Report).

- Survey of a spring discovered last year for the presence of salamanders (none found so far).
- Two newly discovered sinkholes in the area of the proposed black-capped vireo habitat manipulation were assessed. No suitable habitat for troglobitic species was present.
- Enumeration and mapping of Golden-cheeked Warbler territories (See City of Austin 2007 Golden-cheeked Warbler Report).
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.
- Out of the planned 60 acres for selected for black-capped vireo mechanical habitat manipulation on Lime Creek, six acres were manipulated before the beginning of the warbler season. During 2007 warbler monitoring, several males and fledglings were found adjacent to the cleared area and within the area proposed for further clearing. As such, all plans for future clearing were halted. American Youth Works was contracted to perform wildland fire mitigation work for the six acres of cleared potential black-capped vireo habitat.
- Periodic fence repair. Perimeter fence has been repeatedly damaged by vehicular crashes.
- Removal of trash, brush, and construction spoils.

NORTH LAKE AUSTIN MACROSITE

Staff conducted 3 white-tailed deer census counts on a five-mile route on the Cortana tract (representing the North Lake Austin Macrosite) in August and September 2007, with an average survey count of one deer per 75.8 acres. A total of 9 white-tailed deer were culled.

Cowfork/Coldwater

Management activities on these tracts included:

- Enumeration of Golden-cheeked Warbler territories. (City of Austin 2007 Golden-cheeked Warbler Report).
- Continued assessment of the tracts for potential Black-capped Vireo habitat creation/restoration.
- Periodic patrols of main roads and perimeter fencing to look for signs of trespassing, vandalism or dumping.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

- Removal of non-native invasive plants with the assistance of volunteers.
- Discovery of encroachment on the central portion of Cowfork, originating from the Long Canyon tract: materials were removed.
- Removal of trash, brush, and construction spoils.
- Worked with Austin Energy to prevent access to a portion of the Cowfork tract next to City Park Road that was being used for repeated dumping.
- Clearing of vegetation and partial fence construction along the northeast portion of the Cowfork tract.
- Periodic patrols of main roads and perimeter fencing to look for signs of trespassing, vandalism, or dumping.

Cortaña

Management activities on this tract included:

- Enumeration of Golden-cheeked Warbler territories (City of Austin 2007 Golden-cheeked Warbler report).
- Mapping of Black-capped Vireo territories and assessment of productivity (City of Austin 2007 Golden-cheeked Warbler report).
- Maintenance of Black-capped Vireo habitat. American Youth Works removed invading Ashe juniper from 16 acres, and lopped off, at waist-height, the larger trunks of shin oaks and plateau live oaks, to promote the shrubby growth favored by the vireos. BCP volunteers removed juniper seedlings from another 2 to 3 acres of Black-capped Vireo habitat.
- A total of 9 white-tailed deer were culled from the tract under the TPWD Level 2 MLDP. Harvesting began in November of 2006 and ended in February of 2007. The harvested meat was donated to the Capital Area Food Bank.
- Construction of approximately 1400 linear feet of deer-proof game fence, and 2400 linear feet of ornamental iron fence on the northeastern boundary of the tract.
- Notification to 10 neighboring property owners that they were encroaching on BCP property.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism, or dumping.
- Repair of the perimeter fence.
- Trash removal.
- Trimming of vegetation encroaching on roads.
- Removal of non-native invasive plants.

- Maintenance and operation of one Brown-headed Cowbird trap (City of Austin 2007 Black-capped Vireo report).
- Maintenance of existing deer stands and feeders.
- Installation of primary and secondary trenches bracketing an oak wilt center at the southern end of the tract.
- Reclamation of the oak wilt trenches by American Youth Works. BCP volunteers re-seeded the trenches with native grass seed mix.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending. Continued monitoring of existing OW centers.
- Research conducted by Baylor University for the implementation of a fire modeling system for central Texas' wildland urban interface.

Emma Long Park and Preserve

Management activities included:

- Mapping of Golden-cheeked Warbler territories on a 100-acre prime study plot, and enumerations of Golden-cheeked Warbler territories on the remainder of the tract. Seasonal staff monitored Golden-cheeked Warblers more intensively in the area between Turkey Creek and the bluffs over Lake Austin, in anticipation of a possible new hiking trail. (City of Austin 2007 Golden-cheeked Warbler report).
- Study of bird diversity along the Turkey Creek trail.
- Continued monitoring of Turkey Creek trail and documentation of trail problems and erosion.
- Planning, with the Turkey Creek trail working group, remediation of habitat degradation.
- Continued removal of non-native invasive vegetation, including the multi-year volunteer project for the removal of two acres of Tree-of-Heaven.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending. Continued monitoring of existing oak wilt centers.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Trash removal.
- Documentation of potential Endangered Species Act violation and encroachment from an adjacent property, and report to U.S. Fish and Wildlife Service (USFWS). Property owner was found to be in compliance, and not encroaching.

Long Canyon

Management activities on this tract included:

- Enumeration of Golden-cheeked Warbler territories (City of Austin 2007 Golden-cheeked Warbler Report).
- Assessment of the tract for potential Black-capped Vireo habitat creation/restoration.
- Maintenance and operation of a Brown-headed Cowbird trap.
- Rare and non-native invasive plant searches accomplished by volunteers.
- Removal of non-native invasive plants.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism or dumping.
- Removal of trash, brush, and construction spoils.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.
- Mapping of non-native invasive vegetation.
- A guided hike for the inaugural hike and lecture series and several subsequent hikes.
- Inaugural native plant education and seedling distribution event held in Long Canyon neighborhood, with focus on woody plant species found in Golden-cheeked Warbler habitat.
- Creation of a BCP liaison for the Long Canyon Homeowner's Association. Worked with the BCP liaison and others on encroachment issues originating from the Long Canyon neighborhood hiking trail adjacent to the tract.

Parke West

Management activities on this tract included:

- Enumeration of Golden-cheeked Warbler territories (City of Austin 2007 Golden-cheeked Warbler Report).
- Assessment of the tract for potential Black-capped Vireo habitat creation/restoration.
- Two karst faunal surveys at Spider Cave (City of Austin 2007 Karst Report).
- Monitoring of Spider Cave and vicinity for the presence of fire ants and conducted one boiling water treatment for their control.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism, or dumping.
- Removal of trash, brush, and construction spoils.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.

- Repair of 6 ft. chain link fence with three strands of barbed wire on top.
- Modified and/or reconstructed entrance, gate and fence for entrance off RR 2222.

SOUTH LAKE AUSTIN MACROSITE

Staff conducted 3 white-tailed deer census counts on a 5–mile census route on the South Lake Austin Macrosite tracts (Double J&T, Reicher Ranch, and Bohls) in August of 2007, with an average survey count of 1 deer per 16.0 acres. A total of 27 white-tailed deer were culled from the entire macrosite.

Bohls Ranch

This riverfront tract is bordered on the west by Reicher Ranch and on the east by the Lake Pointe subdivision and its 240-acre mitigation tract. Since much of the common boundary between Bohls and the Lake Pointe mitigation is not fenced, the potential for frequent trespassing onto Bohls continues. Management activities included:

- Mapping of Golden-cheeked Warbler territories on a 100-acre prime study plot, in addition to enumerations on the remainder of the tract (City of Austin 2007 Golden-cheeked Warbler report).
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Aerial reconnaissance for oak wilt: one suspicious live oak was found. No symptoms were observed, but a drastic loss of canopy occurred. The tree will continue to be monitored.
- Replaced and re-configured entrance and gates. Installed appropriate signage.
- Continuing Black-capped Vireo habitat manipulation and restoration efforts, including --with the assistance of American Youth Works -- the topping of shin oaks and live oaks and hand clearing of juniper in the newer 18 acres of the Black-capped Vireo restoration site.
- Removal of non-native invasive vegetation.
- Culling of white-tailed deer under the TPWD Level 2 MLDP. Harvesting began in November of 2006 and ended in February of 2007. Harvested meat was donated to the Capital Area Food Bank.
- Maintenance of existing stands and feeders for the white-tailed deer management program.
- Breeding Bird Surveys at 6 points in the Vireo Restoration area (4 visits).
- Monitoring of birds on 6 Land Condition Trend Analysis transects in the proposed wastewater treatment plant area (4 visits).
- Maintenance and operation of a Brown-headed Cowbird trap.

- Conducted a prescribed burn in the Black-capped Vireo habitat restoration area (25 acres). Three days later, gale force winds from a strong cold front caused some smoldering mulch piles to flare up, resulting in a minor wildfire incident. An additional 1.7 acres were burned outside of the management unit.
- Photo-point monitoring of vegetation in Black-capped Vireo habitat restoration area.
- Replacing a thirty-foot section of chain link perimeter fence.
- Vegetation transects, by means of point-intercept and line-transect methods, were completed at 8 permanent points to monitor Black-capped Vireo habitat restoration efforts.
- Trash removal.
- Research conducted by Baylor University for the implementation of a fire modeling system for central Texas' wildland urban interface.

Commons Ford Ranch Park

Management activities included:

- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Aerial reconnaissance for oak wilt: no oak wilt observed.
- Leading guided bird hikes for Travis Audubon Society.

Double J&T

Management activities included:

- Trash removal.
- Perimeter fence repair work.
- Monitoring for golden-cheeked warblers conducted on a 100-acre transitional plot, in addition to enumerations on the remainder of the tract (City of Austin 2007 Golden-cheeked Warbler Report).
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Installation of cable and bollards (Austin Energy) on the north side of Murfin Road, to deter dumping.
- Removal of non-native invasive plants.
- Culling of white-tailed deer under the TPWD Level 2 MLDP. Harvesting began in November of 2006 and ended in February of 2007. The harvested meat was donated to the Capital Area Food Bank.

- Aerial reconnaissance for oak wilt: no new oak wilt observed. Continued monitoring of two existing OW centers. Removed one infected red oak.
- Maintenance of existing stands and feeders for the deer management program.
- Continued monitoring of transplanted grasses at a quarry restoration site.
- Maintenance and operation of a Brown-headed Cowbird trap.
- Continued problems with the Alta Vista neighborhood and Toll Brothers Construction regarding silt flow into preserve from a storm water retention pond. Silt from two plunge pools and the pond were excavated by J.C. Evans Construction Co. in December. Additional ponds upstream have begun to exhibit similar signs of failure. City of Lakeway Code Enforcement continues to neglect the issue.
- Maintenance of interior roads for vehicle clearance.
- Met with Hudson Bend Fire Dept. and patrolled Apache Shores boundary. The inspector took photos and issued warnings for fire hazards and dumping infractions.
- Installing 8' net-wire game fence an additional 4100 linear feet along the entire southern boundary. The boundary fence for this tract is now complete.
- Collected white-tailed deer browse data to submit to TPWD for the MLDP.
- Research conducted by Baylor University for the implementation of a fire modeling system for central Texas' wildland urban interface.

Reicher Ranch

In August 2007 the City of Austin transferred approximately 7 acres of non-habitat to an adjacent landowner in exchange for, among other things, the 17-acre Bohls II property. Management activities included:

- Trash removal.
- Enumeration of Golden-cheeked Warbler territories (City of Austin 2007 Golden-cheeked Warbler Report).
- Routine maintenance and upkeep of the greenhouse.
- Removing the Brown-headed Cowbird trap from the site due to vandalism. A report was filed with the Travis County Sheriff's Department.
- Seed preparation and planting of numerous plant species in greenhouse for use in re-vegetation efforts on the BCP. Supervised volunteers on routine maintenance and plantings.
- Training for volunteers to become docents to lead guided hikes for the public. Reicher Ranch will host periodic guided hikes (see 2007 Outreach report).

- In selected areas treated fire ants with boiling water.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Removal of non-native invasive vegetation.
- Aerial reconnaissance for oak wilt: no new oak wilt observed. Continued monitoring of existing oak wilt center.
- Installed a 2000 linear foot trench to sever the root systems of the live oaks and prevent the spread of oak wilt into Golden-cheeked Warbler habitat.
- Treated 56 non-symptomatic live oaks inside the aforementioned oak wilt center with Alamo® fungicide in an attempt to save and protect these individual trees, which surround our future headquarters.
- Installed cable and bollards along open area on southern boundary to prevent any further vehicular trespass. Several instances involved vehicles entering the tract and damaging interior roads and the grounds of the compound.
- Maintenance and operation of a Brown-headed Cowbird trap.
- Road repair work.
- Re-vegetation and sowing of native seed around WCD headquarters.
- Damage claim issued to Opus West regarding trees removed and/or damaged by a heavy equipment operator on southern boundary.
- Collected white-tailed deer browse data to submit to TPWD for the MLDP.
- Research conducted by Baylor University for the implementation of a fire modeling system for central Texas' wildland urban interface.

Schramm Ranch

This 100-acre tract was relinquished from the City of Lakeway to the City of Austin in May of 2007.

Management activities included:

- Enumeration of Golden-cheeked Warbler territories (See City of Austin 2007 Golden-Cheeked Warbler Report).
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

BARTON CREEK MACROSITE

Barton Creek Wilderness Area

Important management activities and concerns in FY 2006-07 included:

- Mapping of Golden-cheeked Warbler territories on a 100-acre prime study plot, and enumerations of Golden-cheeked Warbler territories on the remainder of the tract (City of Austin 2007 Golden-cheeked Warbler report).
- Extensive monitoring of bracted twistflower colonies. BCP staff and volunteers located more than 120 plants.
- Collection of leaf tissue from bracted twistflower plants, for molecular work conducted by Texas A&M to determine if this population is distinct from other populations in the Austin area.
- Collection of seeds from 20 bracted twistflower plants. The goal of this project is to increase the number of viable populations of the species in the Austin area. Seeds will be stored at the Lady Bird Johnson Wildflower Center, the University of Texas, and Texas A & M University until suitable sites for reintroduction can be found.
- Periodic inspections of Cave Y and Substation Sink entrances for signs of human visitation, trash, and damage. Found no signs of trespass or vandalism.
- Monitoring for infestations of red imported fire ants. Found no activity within the caves.
- Removal of non-native invasive vegetation.
- Temporary installation of a security camera, with assistance of Austin Energy, to monitor a frequently vandalized section of perimeter fence.
- Repair of vandalized perimeter fence, gate, and closure signs to prevent illegal access into Golden-cheeked Warbler habitat.
- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Removal of several active and inactive camps, with cooperation from PARD and Park Police.
- Routine trash removal.
- Continued negotiations with USFWS, the City's Parks and Recreation Department (PARD), Save Barton Creek Association, and others, to extend the chain link fence flanking Loop 360 southward an additional 1000 feet. The purpose of the fence would be to protect a bracted twistflower colony and to prevent further degradation of Golden-cheeked Warbler habitat.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.
- Continued monitoring of active oak wilt centers. Removed 14 newly infected red oaks.

Barton Creek Greenbelt

Management activities included:

- An annual karst fauna survey at Airman's Cave, and routine maintenance and monitoring (City of Austin 2007 Karst Report).
- Routine water and benthic sampling from several points on the creek by Austin WSPDR staff. These samples help to determine the health of the creek and how the creek is being affected by adjacent urban sprawl.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.
- Removal of non-native invasive vegetation.

Bohls II

This 17-acre tract straddles Barton Creek and borders the TNC-Barton Creek Habitat Preserve. Bohls II was acquired in August of 2007. Management activities included:

- Routine patrol of dwellings and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Aerial reconnaissance for oak wilt: observed oak wilt encroaching from TNC-Barton Creek Habitat Preserve on the west boundary. Will continue to monitor.

Friesenhahn

Management activities included:

- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending.
- Continued monitoring of active oak wilt centers. Removed 11 newly infected red oaks.
- Removal of non-native invasive vegetation.
- Trash removal.

Senna Hills

Management activities included:

- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism and/or dumping.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

WEST AUSTIN MACROSITE

Barrow Preserve

AWU and WPDRD staff continued to meet on site and immediately downstream to address ongoing sewer line problems. AWU will re-route some of the existing line and add manholes, which will help prevent future sewer leaks.

Other management activities included:

- Routine patrols and monitoring of adjacent new development (Canyon Rim).
- Water monitoring for pollutants by WSPDR staff.
- Removal of non-native invasive vegetation.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

Mount Bonnell Park

This small hilltop park overlooking Lake Austin continues to receive high visitation rates, especially by out-of-town visitors seeking a panoramic view of the lake and scenic Texas Hill Country. Management activities included:

- Extensive monitoring of bracted twistflower colonies. BCP staff and volunteers located 71 plants.
- Collection of leaf tissue from bracted twistflower plants, for molecular work conducted by Texas A&M to determine if this population is distinct from other Invasive plant removal -- woody plants removed by BCP and PARD staff.
- Aerial reconnaissance for oak wilt: no oak wilt observed.

Stillhouse Hollow

Management activities include:

- Erosion and sedimentation control.
- Repair of vandalized security fence around Cotterell Cave.
- Control of red imported fire ants with boiling water. (City of Austin 2007 Karst Report).
- Removal of non-native invasive vegetation.
- Trail maintenance and repair.
- Entry sign vandalism repair.
- Beginning work on an interpretive kiosk, with volunteer assistance and in collaboration with the Parks and Recreation Department.
- Trash removal (including the removal of tree forts).
- Three faunal surveys at Cotterell Cave (City of Austin 2007 Karst Report).
- Cave cricket exit count (City of Austin 2007 Karst Report).

- Aerial reconnaissance for oak wilt: no oak wilt observed.

Ullrich Water Treatment Plant

This tract is managed by the Austin Water Utility. Management activities overseen by BCP staff and volunteers included:

- Extensive monitoring of bracted twistflower colonies. BCP staff and volunteers located 63 plants.
- Collection of leaf tissue from bracted twistflower plants, for molecular work conducted by Texas A&M to determine if this population is distinct from other populations in the Austin area.
- Collection of seeds from 13 bracted twistflower plants. The goal of this project is to increase the number of viable populations of the species in the Austin area. Seeds will be stored at the Lady Bird Johnson Wildflower Center, the University of Texas, and Texas A & M University until suitable sites for reintroduction can be found.
- A cave faunal survey conducted by staff at Little Bee Creek cave (City of Austin 2007 Karst Report).
- Aerial reconnaissance for oak wilt: no oak wilt observed.

Vireo Research Area

Management activities on this tract included:

- Routine patrols of main roads and perimeter fencing to look for signs of trespass, vandalism, or dumping.
- Enumeration of Black-capped Vireo territories; no vireos were detected.
- Enumeration of Golden-cheeked Warbler territories. (City of Austin 2007 Golden-cheeked Warbler Report)
- Assessment of the tract for potential Black-capped Vireo habitat creation/restoration.
- Removal of non-native invasive vegetation.
- Aerial reconnaissance for oak wilt. Site inspections to ground-truth the observations are still pending. Continued monitoring of existing oak wilt centers. Removed 13 infected red oaks.

Travis County

Travis County currently manages a total of 5,093 acres of habitat lands dedicated to the BCP, and continues to actively pursue acquisition and management of additional habitat lands to meet the goals of the BCCP.

BULL CREEK MACROSITE

Canyon Vista

The Canyon Vista tract consists of two parcels located in the Bull Creek Macrosite. The 237-acre Canyon Vista tract and the 1-acre Canyon Vista Conservation Easement were conveyed to the County by a private landowner previously managing these lands under USFWS 10(a) permit PRT-783564. Travis County accepted transfer of these lands in June of 2004. Management efforts included:

- Regular patrols by Travis County BCP Rangers.
- Baseline data and land use history was researched and recorded, and creation of a Land Management Plan was initiated. Staff expects to present a final draft to the USFWS in FY2008.
- Continuing public outreach efforts with neighboring landowners, Home Owners Associations, and the staff and students at the adjacent Laurel Mountain Elementary School.
- Travis County met with homeowners and developers with interests adjacent to the preserve to address encroachment, erosion, trespass and illegal dumping concerns.
- White tailed deer and feral hog population surveys were initiated and planning for management of these species was planned for FY2008.
- Boundary fencing and signage was completed.
- Baseline data and land use history was researched and recorded, and creation of a Land Management Plan was initiated. Staff expects to present a final draft to the USFWS in FY2008.
- On February 24, 2007, there was a fire on the Canyon Vista Tract. On the preserve tract, the fire covered a total area of about 5 acres, killing some trees in a 3-acre steep narrow canyon with spot fires beyond. Conditions included winds of more than 50 miles per hour and about 15% humidity. It was caused by the re-ignition of a smoldering brush pile on an adjacent private tract. The Austin fire officials extinguished the fire and continued monitoring the area over a 48 hour period to prevent re-ignition. It was later determined that because of location, this should have been fought by county fire officials. The fire officials noted that even though the winds were high, the fire was mostly a ground fire and did not become a crown fire.

Concordia University Preserve

The Concordia University Preserve, also sometimes referred to as the “Schlumberger” tract, consists of a 250-acre conservation easement conveyed to Travis County on March

27 of 2007. Management obligations were accepted by Travis County as the result of terms of the landowner's USFWS 10(a) permit TE-827597-2. Management on this tract in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Baseline data and land use history was researched and recorded, and creation of a Land Management Plan was initiated. Staff expects to present a final draft to the USFWS in FY2008.
- Black-capped vireos were identified from this tract, and a description is found in Travis County's *Monitoring of the Black-capped Vireo, 2007 Field Season*, attached as Appendix L.
- County Staff met with Concordia University officials to discuss research interests and science curriculum related to access onto and use of the Preserve area.

Ribelin Tract

The Ribelin tract was acquired fee simple by Travis County in June of 2004. This parcel consists of 320 acres and connects City of Austin managed preserve lands located to the south (the Ivanhoe tract) with those to the north and west (the Franklin and Lanier tracts). Travis County management on the Ribelin tract in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Baseline data and land use history was researched and recorded, and creation of a Land Management Plan was initiated. Staff expects to present a final draft to the USFWS in FY2008.
- Travis County staff met with and reviewed power line and infrastructure maintenance activities performed by multiple utility providers.
- Coordination of management and monitoring efforts with City of Austin BCP staff responsible for surrounding parcels.
- Travis County Structural Pest Control Board licensed staff worked to identify and remove the exotic and invasive heavenly bamboo (*Nandina domestica)* at the Ribelin tract. For a full description of invasive and exotic plant management activities, please see Appendix N, Plant Management Activities on Travis County Balcones Canyonlands Preserve during FY2007.
- Travis County staff trapped brown-headed cowbirds on the tract and a summary of these activities is attached as Appendix O.
- Endangered species surveys and baseline data collection were initiated and are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season* report, attached as Appendix K.

CYPRESS CREEK MACROSITE

CYPRESS UNIT

The Cypress Unit consists of 473 acres located within the Cypress Creek Macrosite. The Cypress Unit is comprised of the Attwood, Blake, "The Crossings", King and Toops tracts, and includes lands held in fee simple ownership and managed thorough conservation easements.

Attwood tract

The 31-acre Attwood tract was acquired fee simple in June of 2004. Management activities on the Attwood tract in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Boundary delineation was initiated.
- White-tailed deer populations were surveyed, and management of these populations continued this year. For more information on Wildlife Management, please see *2007 Summary of Wildlife Management Activities on Travis County Managed Tracts of the Balcones Canyonlands Preserve*, attached as Appendix O.

Blake tract

The 38-acre Blake tract was a fee simple acquisition completed in June of 2004. Management efforts included:

- Regular patrols by Travis County BCP Rangers.

"The Crossings" tract

The tract referred to as "The Crossings", also sometimes referred to as the Beck tract, consists of a 175-acre conservation easement conveyed to Travis County in March of 2004. Management obligations were accepted by Travis County as the result of terms of the landowner's USFWS 10(a) permit TE-024619-0. Habitat management in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- County staff provided education and outreach opportunities and provided management guidance for The Crossings' on-site staff.
- Travis County helped host and provided guided interpretive tours and events for the national Bird Education Through Education "Flying Wild Conference" held February 5-8, 2007.

- Travis County co-hosted a BCP Hike and Lecture Series presentation on "Rare Plants of the Edward's Plateau" with Nature Conservancy Botanist Bill Carr.
- Golden-cheeked warbler presence/absence surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season*, attached as Appendix K.

King tract

The King tract consists of a 59-acre parcel immediately adjacent to the Attwood and Blake tracts, and the Nature Conservancy of Texas' Lehmann Preserve. This parcel was acquired in October of 2003. Management activities on the King tract in FY2007 included:

- Regular patrols by Travis County BCP Rangers.

Toops tract

Habitat management activities on the 170-acre Toops tract included:

- Regular patrols by Travis County BCP Rangers.
- Travis County staff met with and reviewed power line and infrastructure maintenance activities performed by multiple utility providers.
- Assessment and control of non-native and invasive plant species continued.
- Investigations to quantify and manage white-tailed deer populations continued. A summary of these activities is attached as Appendix P.
- Fencing and property boundary delineation continued.
- White tailed deer and feral hog population surveys were continued and planning for management of these species was planned for FY2008.

JOLLYVILLE UNIT

The Jollyville Unit is located in the Cypress Creek Macrosite and incorporates the Bunten, Cuevas, Grandview Hills, Lake Perspectives, Mirtsching, Nootsie, Romberg, Stratton, Vireo Ridge and Vista Point tracts, and includes lands held in fee simple ownership and managed thorough conservation easements. One new acquisition, referred to as the Snowden tract, was acquired in FY2007.

Bunten tract

The 170-acre Bunten tract was acquired in fee during FY2002. Travis County habitat management occurring on the Bunten tract in FY2007 consisted of:

- Regular patrols completed by Travis County BCP Rangers.

- A 100-acre study plot for collection of long-term distribution and abundance data for the golden-cheeked warbler was monitored. Results of the intensive data collection and monitoring on the study plot are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler, 2007 Field Season* report, attached as Appendix K.
- Travis County Structural Pest Control Board licensed staff worked to identify and remove invasive and exotic plant species from the Bunten tract, including Chinaberry (*Melia azedarach)* and periwinkle *(Vinca minor)*. For a full description of invasive and exotic plant management activities, please see Appendix N, Plant Management Activities on Travis County Balcones Canyonlands Preserve during FY2007.
- Travis County Natural Resources staff coordinated Jollyville Plateau salamander survey and monitoring efforts with City of Austin Watershed Protection and Development Review staff. Substrate composition, water quality parameters (temperature, pH, specific conductance, alkalinity and dissolved gasses), and population surveys were initiated. A report detailing these findings is presented attached in Appendix M.
- New fences were constructed on the tract's northern and eastern boundaries.

Cuevas Tract

The 140-acre Cuevas tract (also sometimes referred to as the "Tomen-Parke Cave tract") was acquired fee simple in December 2003. Habitat management activities in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Golden-cheeked warbler surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler, 2007 Field Season*, attached as Appendix K.
- Surface monitoring of protected karst features continued, and is discussed in the *Balcones Canyonlands Preserve Karst Management 2007 Annual Report*, attached as Appendix P.
- Fencing and property boundary delineation continued.

Grandview Hills tracts

The Grandview Hills tract consists of multiple separate parcels that were acquired fee simple or conveyed through conservation easements in FY2002 through FY2004. Habitat management on Grandview Hills in FY2007 included:

- Regular patrols by Travis County BCP Rangers.

- Travis County Natural Resources and Law Enforcement staff provided members of the Grandview Hills Homeowners Association and the Ridge at Grandview Hills Homeowners Association with guided tours and educational opportunities in the preserve.
- Black-capped vireo surveys were performed and results are summarized in Travis County's *Monitoring of the Black-capped Vireo, 2007* report, attached as Appendix L.
- Monitoring of past restoration work for black-capped vireos, locations identified and recorded with GPS equipment, vegetation monitored, and photo points established and photo data collected.
- Travis County staff trapped brown-headed cowbirds and continued surveys to quantify and manage populations of white-tailed deer and feral hogs. The *2007 Summary of Wildlife Management Activities on Travis County Managed Tracts of the Balcones Canyonlands Preserve* is attached as Appendix O.
- Travis County continued Texas Historical Commission review of cultural sites throughout the tract.
- Travis County coordinated efforts with American Youth Works to perform habitat restoration and trail maintenance.
- Travis County Natural Resources staff coordinated Jollyville Plateau salamander survey and monitoring efforts with City of Austin Watershed Protection and Development Review staff. Substrate composition, water quality parameters (temperature, pH, specific conductance, alkalinity and dissolved gasses), and population surveys were initiated. A report detailing these findings is presented attached in Appendix M.
- Surface and subsurface monitoring of protected karst features continued, and is discussed in the Balcones Canyonlands Preserve Karst Management 2007 Annual Report, attached as Appendix P.
- New fencing was constructed on the eastern boundary.
- Coordinated on drainage and erosion concerns with the developers of the tract east and continued to monitor impact to the preserve during the development.

Lake Perspectives tract

Travis County in FY1999 acquired the 124-acre Lake Perspectives tract. Management activities taking place in FY2007 consisted of:

- Regular patrols by Travis County BCP Rangers.
- Endangered species surveys, including intensive efforts on one 100-acre study plot for collection of long-term distribution and abundance data for the golden-

cheeked warbler per the guidelines found in BCP Land Management Plan (BCP LMP) continued. Results of this data collection and monitoring are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season* report, attached as Appendix K.

- Travis County coordinated efforts with American Youth Works to perform habitat restoration and trail maintenance.
- White-tailed deer population management continued on the Lake Perspectives tract. The *2007 Summary of Wildlife Management Activities on Travis County Managed Tracts of the Balcones Canyonlands Preserve* is attached as Appendix O.

Nootsie Tract

The Nootsie tract was acquired in FY05, adding 120-acres to Travis County's Jollyville Unit. Management activities included:

- Regular patrols by Travis County BCP Rangers.
- Assessment and control of non-native and invasive plant species continued. Efforts to control Chinaberry (*Melia azedarach)* and tree of heaven *(Ailanthus altissima)* populations were directed by Structural Pest Control Board licensed staff, and populations of other invasive and non-native species were recorded. A summary of vegetation monitoring and management activities in FY2007 is presented in Appendix N.
- Black-capped vireo surveys were performed and results are summarized in Travis County's *Monitoring of the Black-capped Vireo, 2007 Field Season*, attached as Appendix L.
- Travis County coordinated efforts with American Youth Works to perform habitat restoration and trail maintenance.
- Management of brown-headed cowbirds, white-tailed deer and feral hog populations continued. The *2007 Summary of Wildlife Management Activities on Travis County Managed Tracts of the Balcones Canyonlands Preserve* is attached as Appendix O.

Romberg tract

The 40-acre Romberg tract has been a portion of Travis County's BCP land since the permit's inception in 1996. Habitat management activities in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Endangered species surveys are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season* report, attached as Appendix K.

Snowden tract

Travis County acquired the 54-acre Snowden parcel in 2007. Management of this tract in FY2007 consisted of:

- Regular patrols by Travis County BCP Rangers.
- Initial cleanup of the site related to two structures and associated outbuildings.
- Boundary surveys to assess boundary concerns such as need for new fencing, trash and dumping on our side of the line, drainage problems, trespass issues, etc.
- Initial surveys of the tract biological features. Baseline data and land use history was researched and recorded, and creation of a Land Management Plan was initiated. Staff expects to present a final draft to the USFWS in FY2008.

Stratton tract

Travis County acquired the 6-acre Stratton tract for the Preserve in August of 2004. Management of this tract in FY2007 consisted of:

- Regular patrols by Travis County BCP Rangers.
- Assessment and initiation of habitat restoration needs.
- Fencing and property boundary delineation continued.
- Assessed need to tear down dilapidated and vandalized structures.
- Damaged fences were repaired.

Texas System of Natural Laboratories tracts

Travis County accepted in FY05 the fee simple land transfer of a total of six acres from the Texas System of Natural Laboratories, a non-profit research organization. This land consists of multiple parcels surrounding the openings of a number of important karst features. Management of these parcels included:

- Regular patrols by Travis County BCP Rangers.
- Baseline data and land use history was researched and recorded.
- All karst features were located using GPS, mapped, and analyzed for protection needs.
- Assessment and initiation of debris removal and habitat restoration needs.
- Property boundaries were surveyed for Tooth and Root Caves.
- Fencing and property boundary delineation was initiated.
- Red Imported Fire Ant monitoring was performed.
- Karst feature surveys continued, as reported in the *Balcones Canyonlands Preserve Karst Management 2007 Annual Report*, attached as Appendix P.

Vireo Ridge tract

Vireo Ridge was acquired in fee through multiple transactions in FY2000 and FY2001, and consists of 581 acres of GCWA and BCVI habitat. Management on Vireo Ridge in FY2007 consisted of:

- Regular patrols by Travis County BCP Rangers.
- American Youth Works performed over 1005 hours of habitat restoration and trail maintenance on this tract in 2007.
- Black-capped vireo surveys and habitat manipulation efforts to restore nesting areas in this historically populated area continued as reported in the *Monitoring of the Black-capped Vireo, 2007 Field Season,* attached as Appendix L.
- Golden-cheeked warbler surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler, 2007 Field Season*, attached as Appendix K.
- Travis County staff trapped brown-headed cowbirds on the preserve, as well as on private property immediately adjacent to the Jollyville Unit. Investigations to quantify and manage populations of white-tailed deer and feral hogs continued. A summary of these activities is attached as Appendix O.
- Travis County Structural Pest Control Board licensed staff worked to identify and remove invasive and exotic plant species at Vireo Ridge, including Chinaberry (*Melia azedarach),* heavenly bamboo (*Nandina domestica),* Japanese privet *(Ligustrum japonicum)* and silk tree *(Albizia julibrissin).* For a full description of invasive and exotic plant management activities, please see Appendix N, Plant Management Activities on Travis County Balcones Canyonlands Preserve during FY2007.
- White tailed deer and feral hog surveys were completed and efforts to manage populations of these species is reported in the *2007 Summary of Wildlife Management Activities on Travis County Managed Tracts of the Balcones Canyonlands Preserve,* attached as Appendix O.
- Karst features were investigated, as summarized in the *Balcones Canyonlands Preserve Karst Management Report, 2007* found in Appendix P.

Vista Point tract

Travis County acquired the 490-acre Vista Point tract in FY2002. Habitat management on this tract in the last year included:

- Regular patrols by Travis County BCP Rangers.

- Travis County coordinated efforts with American Youth Works to perform habitat restoration and trail maintenance.
- Surface monitoring and investigations of protected karst features continued as summarized in the *Balcones Canyonlands Preserve Karst Management Report, 2007* found in Appendix P.
- Golden-cheeked warbler presence/absence surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season*, attached as Appendix K.
- Investigations to quantify and manage populations of white-tailed deer and feral hogs continued. A summary of these activities is attached as Appendix O.

NORTH LAKE AUSTIN UNIT

Travis County manages the Franzetti, Greenshores, Grey Mountain, and Hereford tracts located within the North Lake Austin Macrosite.

Franzetti

Travis County accepted transfer of a conservation easement from the National Fish and Wildlife Foundation in FY2005. This 54 acre tract contains habitat for golden-cheeked warblers.

- Regular patrols by Travis County BCP Rangers.
- Golden-cheeked warbler presence/absence surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season*, attached as Appendix K.
- Efforts to complete a Land Management Plan Tier III document for this property were initiated. Staff expects to present a final draft to the USFWS in FY2008.
- Monitored construction of new house on the ¾ ac. permitted home site and roadway.
- Coordinated concerns about larger home site clearing area and erosion problems with the new owner and USFWS.
- Identified and recorded with GPS equipment an area illegally cleared by an adjacent landowner.
- Fenced a portion of northern boundary in the illegal clearing area.

Greenshores Conservation Easement

A Conservation Easement referred to as Greenshores was conveyed to Travis County in accordance with the terms and conditions of USFWS 10 (a) permit # TE-074582-0 in April of 2004. This 52-acre parcel is located in the North Lake Austin Macrosite, and is

adjacent to the City of Austin's Emma Long Park. Travis County actions on the Greenshores tract in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Efforts to complete a Land Management Plan Tier III document for this property continued. Staff expects to present a final draft to the USFWS in FY2008.
- Fencing to define and protect preserve boundaries was completed.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- Staff continued negotiations with the developer to finalize long-term protection efforts for an adjacent area slated for construction.
- Travis County Structural Pest Control Board licensed staff worked to identify and remove invasive and exotic plant species, including Chinaberry (*Melia azedarach)* and heavenly bamboo (*Nandina domestica),* and tree of heaven *(Ailanthus altissima).* For a full description of invasive and exotic plant management activities, please see Appendix N, Plant Management Activities on Travis County Balcones Canyonlands Preserve during FY2007.
- Golden-cheeked warbler presence/absence surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season*, attached as Appendix K.
- Monitored habitat problems and coordinated with owner developer and USFWS on illegal clearing on pipeline through the tract, erosion damage, unauthorized clearing, and other unauthorized activities.

Grey Mountain

Travis County accepted a Conservation Easement in accordance with the terms and conditions of USFWS 10 (a) permit # TE-037888-1 on May 9, 2006. This 25-acre parcel is located in the North Lake Austin Macrosite, and provides habitat for the golden-cheeked warbler. Travis County actions on the Grey Mountain tract in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Efforts to compile a Land Management Plan Tier III document were initiated. Staff expects to present a final draft to the USFWS in FY2008.
- Fencing to define and protect preserve boundaries was completed.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- Golden-cheeked warbler presence/absence surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season*, attached as Appendix K.

Hereford

Travis County acquired the 10-acre Hereford tract in 2006.

- Regular patrols by Travis County BCP Rangers.
- Efforts to generate a Land Management Plan Tier III document for this property were initiated. Staff expects to present a final draft to the USFWS in FY2008.
- Endangered species surveys and baseline data collection were initiated and are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season* report, attached as Appendix K.

Steiner Ranch

The Preserve tracts of Steiner Ranch comprise 819 acres in five separate parcels managed by Travis County since FY2001. Though located within the North Lake Austin Macrosite and contiguous with other BCP lands, the acreage at Steiner Ranch has yet to be credited towards BCP land acquisition goals, as these lands are outside the original preserve acquisition boundaries established by the USFWS.

Conservation Easements on these tracts were transferred to Travis County as partial mitigation required by the USFWS for impacts resulting from the associated development. Under the terms of the Conservation Easement, the Steiner Ranch Master Association (SRMA) maintained access to a limited number of approved nature trails within the Preserve areas. The use of these trails is restricted to hiking, jogging, and nature viewing from maintained trails, and is reserved for the sole use of residents of the development. Access to remaining portions of these preserve tracts was available to the public through guided access for educational and outreach activities provided by Travis County BCP staff. Travis County Natural Resources provides consulting and reporting services to the landowner concerning wildlife management throughout the preserve.

The Steiner Ranch Unit is comprised of five tracts referred to as J-Canyon, L-Bend, Middle Section, the Vireo Management Area and North East. Management activities on these parcels included:

J-Canyon tract

- Regular patrols by Travis County BCP Rangers.
- Fencing and property boundary delineation continued.
- County Natural Resources and Law Enforcement staff provided Steiner Ranch Homeowners with guided tours through Preserve areas.

- Coordinated trail signage and trailhead gate installation.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- Met with and coordinated efforts with the Steiner Ranch trails committee regarding proposed trail maintenance and improvements.

L-Bend tract

- Regular patrols by Travis County BCP Rangers.
- Travis County staff met with and reviewed power line and infrastructure maintenance activities performed by multiple utility providers.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- Coordinated trail signage and trailhead gate installation.
- Fencing and property boundary delineation continued.

Middle Section tract

- Regular patrols by Travis County BCP Rangers.
- Travis County staff met with and reviewed power line and infrastructure maintenance activities performed by multiple utility providers.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- Golden-cheeked warbler surveys were performed and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler, 2007 Field Season*, attached as Appendix K.
- Coordinated trail signage and trailhead gate installation.
- Fencing and property boundary delineation continued.

Vireo Management Area tract

- Regular patrols by Travis County BCP Rangers.
- Travis County staff met with and reviewed power line and infrastructure maintenance activities performed by multiple utility providers.
- Fencing and property boundary delineation continued.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- County staff coordinated trail signage and trailhead gate installation.

North East tract

- Regular patrols by Travis County BCP Rangers.
- Travis County staff met with and reviewed power line and infrastructure maintenance activities performed by multiple utility providers.
- Travis County staff met with and coordinated landowner activities in accordance with the terms and conditions of the Conservation Easement.
- Golden-cheeked warbler and black-capped vireo surveys were performed and results are summarized in Travis County's *Monitoring of the Black-capped Vireo, 2007 Field Season* and the *Monitoring of the Golden-cheeked Warbler, 2007* reports, attached as Appendices L and K.
- Coordinated trail signage and trailhead gate installation.
- Fencing and property boundary delineation continued.

PEDERNALES RIVER MACROSITE

Hamilton Pool Preserve

Public uses permitted prior to Hamilton Pool Preserve's dedication as a portion of the BCP continued through FY2005. The 232-acre site located in the Pedernales Macrosite contains approximately 1.75 miles of maintained nature trails, and provides access to a popular swimming area located in a natural grotto. User fees are assessed, and public access to the Preserve is limited to day use only. Pets, fires, cooking, fishing, and collecting are all prohibited within the Preserve. BCP management at Hamilton Pool in FY2007 included:

- Regular patrols by Travis County BCP Rangers.
- Travis County Parks and Natural Resources staff actively engages school children and the public in education and outreach efforts related to endangered species and the BCP through guided tours and special opportunities throughout the year.
- A 100-acre study plot for collection of long-term distribution and abundance data for the golden-cheeked warbler was established by the BCP Land Management Plan (BCP LMP). Intensive data collection and monitoring on the study plot continued, and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season* report, attached as Appendix K.
- Canyon mock orange *(Philadelphus ernestii)*, one of the BCCP Permit's Species of Concern, is found at Hamilton Pool Preserve, and is monitored and protected in accordance with the federal permit. Monitoring highlights for this species are found in Appendix N.

- Brown-headed cowbird trapping continued at Hamilton Pool Preserve, and results are found in the *2007 Wildlife Management Summary for Travis County BCP Lands,* attached as Appendix O.

SOUTH LAKE AUSTIN UNIT

Medway Ranch

Medway Ranch consists of 345 acres contiguous with the City of Austin's Double J&T Preserve located in the South Lake Austin Macrosite. Management activities on Medway Ranch in FY2007 consisted of:

- Regular patrols by Travis County BCP Rangers.
- Efforts to create a Land Management Plan Tier III document for this tract were initiated. Staff expects to present a final draft to the USFWS in FY2008.
- Public outreach efforts continued with the surrounding landowners and users of the unauthorized trails located throughout the tract.
- Fencing and property boundary delineation continued.
- A 100-acre study plot for collection of long-term distribution and abundance data for the golden-cheeked warbler was established by the BCP Land Management Plan (BCP LMP). Intensive data collection and monitoring on the study plot continued, and results are summarized in Travis County's *Monitoring of the Golden-cheeked Warbler 2007 Field Season* report, attached as Appendix K.

WEST AUSTIN MACROSITE

Wild Basin Wilderness Preserve

Wild Basin Wilderness Preserve is owned by Travis County and managed through contractual agreement by the Committee for Wild Basin Wilderness, Inc. Travis County Parks and Natural Resources supports operation of the 227-acre Preserve through staff and financial assistance. Details concerning the management of Wild Basin Wilderness Preserve are reported below under the heading devoted to The Committee for Wild Basin Wilderness, Inc.

- Travis County staff worked to identify and remove invasive and exotic plant species on Wild Basin Preserve, including Chinaberry, chaste tree, giant reed, red-tipped photinia, Japanese privet, silk tree and Chinese tallow. For a full description of invasive and exotic plant management activities, please see Appendix N, Plant Management Activities on Travis County Balcones Canyonlands Preserve during FY2007.

- Travis County assisted Wild Basin staff with a variety of issues including locating boundaries, installing signage, brush removal, shaded fire break work around building, erosion problems from adjacent development, etc.
- Surveys of golden-cheeked warblers from this tract are presented in the *Wild Basin Wilderness Preserve Golden-cheeked Warbler Survey 2076 Season* report, presented as Appendix R.

Pace Bend Park

Though not considered part of the BCP, Travis County's Pace Bend Park hosts a population of Texabama croton (*Croton alabamensis var. texensis*), one of the BCCP Permit's Species of Concern. Under the terms and conditions of the BCCP, Travis County agreed to monitor and manage this species wherever it occurs on Travis County owned or managed lands. County BCP staff therefore, regularly performs vegetation monitoring and wildlife management activities to protect this unique woody shrub at Pace Bend.

- Appendix N summarizes vegetation monitoring and management activities for Texabama croton in FY2007.
- White-tailed deer management was initiated at Pace Bend Park, and is reported in the Summary of Wildlife Management Activities attached as Appendix O.

Law Enforcement Summary

Law Enforcement Summary

Management of Preserve lands to maintain and increase populations of endangered species in a rapidly developing urban interface presents unique challenges for public agencies. Many BCP tracts present significant management challenges ranging from illegal trespass including pedestrian, mountain bike, all-terrain vehicle, and motorcycle traffic, to illegal dumping to poaching of native wildlife on preserve lands. In addition, some BCP tracts contain important archaeological sites that require additional monitoring and protection.

To protect the significant natural and cultural resources on County owned and managed preserve lands Travis County has temporarily assigned two Park Rangers to the BCP. Travis County Park Rangers are commissioned Texas Peace Officers operating as Deputy Sheriffs under the Travis County Sheriff's Office (TCSO) and are certified by the Texas Department of State Health Services as Emergency Medical Technicians. Their primary duty is to provide the law enforcement component for the effective management of all county owned or managed BCP properties. In FY2005 two additional Park Rangers

underwent training enabling them to provide assistance as necessary with resource protection and law enforcement activities on the Preserve, and two more Rangers underwent introductory training in FY 2007/2008.

Trespass onto posted preserve lands is the most common illegal activity addressed by Travis County BCP Rangers. When trespassers are apprehended on BCP property they are identified per state law and TCSO policy, questioned regarding their activities, issued a criminal trespass warning and escorted from the property. In FY2007 the number of documented trespass incidents on Travis County BCP tracts increased to ten. In addition, there was one theft incident involving the loss of wildlife management equipment and two criminal mischief incidents related to the destruction of Travis County owned property. Included in the last category was the unauthorized cutting of over thirty trees and impacts to a creek and riparian area in protected habitat at the Greenshores BCP tract.

Rangers are responsible for boundary patrols and quarterly inspections of County BCP tracts. Patrols are conducted to provide a law enforcement presence to help minimize illegal activities as well as to assess the condition of County property such as boundary fencing. Rangers are also trained to recognize and respond to hazardous and illegally dumped materials, and regularly cooperate with local, state and federal agencies to appropriately address the threats these materials pose to health and human safety as well as to the natural environment. Inspections encompass surveys of facilities, trails, invasive and non-native species and management needs, trespass issues and other areas that impact the overall condition of preserve tracts.

Travis County BCP Rangers assist with, or lead ongoing education programs conducted by BCP staff, assist with the monitoring and removal of non-native plant and animal species, monitor and protect cultural resource sites, assist with trail mapping and provide support for Travis County Natural Resources field staff. In 2007 the BCP Rangers assisted the Natural Resources staff with nine different educational tours including Homeowner Association tours, elementary school tours, and Hike and Lecture Tours sponsored by Travis County. The BCP Rangers also provided assistance with two incidents on City of Austin BCP properties in 2007 and have assisted neighboring landowners and individual BCP land managers with trespass and criminal mischief concerns. BCP Rangers have also secured physical addresses for the gates to all properties, installed appropriate signage at those properties, and have produced and distributed address maps and lists to emergency response agencies in an effort to facilitate interagency cooperation and reduce response times to incidents within the BCP.

In addition, BCP Rangers, along with other Travis County Park Rangers, have taken a lead role in White-Tailed deer management on preserve and park properties. Lastly, the BCP rangers continue to work with county authorized feral hog trappers in an effort to reduce the existing population on BCP properties.

Cultural Resources

As a political subdivision of the State of Texas, Travis County is obligated to comply with the Antiquities Code of Texas to locate, protect and preserve all cultural resource sites on properties within the jurisdiction and management of the County. Travis County Natural Resources is aware of a number of prehistoric and multi-component archaeological sites located on County owned or managed preserve lands. These sites have been recorded with the Texas Historical Commission, and are under review to determine in any merit designation as State Archaeological Landmark status. The Texas Archaeological Research Laboratory located at the University of Texas maintains maps showing locations of identified archaeological sites throughout the BCP. These locations are not identified here, as Section 191.004 of the Antiquities Code of Texas prohibits revealing archaeological site locations in public documents (U. S. Department of the Interior, U. S. Fish and Wildlife Service, 1996).

In order to better protect the important cultural resources known to exist on Balcones Canyonlands Preserve tracts, Travis County field staff have undergone training pertaining to the identification and field assessment of lithic (rock) artifacts well as historic artifacts associated with 19th and 20th century farming and ranching practices most likely to be encountered in Central Texas. Known cultural sites are regularly monitored for illegal activities such as evidence of surface collecting of artifacts or unauthorized excavation. Known cultural sites are currently being mapped with global positioning satellite technology and mapped on USGS 7.5-minute topographic maps. This data has been transmitted to the Texas Historical Commission and maintained by Travis County Natural Resources staff. Cultural features located on BCP properties are reviewed for possible protection through the National Register of Historic Places, Recorded Texas Historic Landmark, or State Archaeological Landmark designations. Currently, no known features meet the criteria for inclusion under these designations.

Education and Outreach Activities

Travis County's Balcones Canyonlands Preserve education and outreach efforts in FY2007 included:

- Interpretation of research data and information about the BCP and endangered species for the general public and interested groups through preserve tours, workshops, special presentations and exhibits.
- 2007 saw the creation of the BCP Hike and Lecture Series, a regularly occurring series of events created to provide opportunities for the public to visit and learn about the preserve and management of the plants and animals that the preserve system was created to protect. Travis County participated in or hosted a number of events throughout the year, including a lecture on rare plant of the Texas Hill Country by Nature Conservancy Plant Ecologist Bill Carr at the Crossings, assisted with interpretive educational hikes at the Travis Audubon Society's Baker Sanctuary, led multiple guided tours at Wild Basin Preserve, and hosted a lecture on conservation of karst invertebrates at Steiner Ranch. The 2007 Hike and Lecture Series generated enormous interest and public support, and an expanded Series is now underway in 2008.
- Travis County makes a special effort to reach out to schoolchildren living in the vicinity of Preserve properties. Participation in activities such as Elementary and Secondary school science, environment and nature clubs, "Austin Science Fun Day", and extra-curricular student programs such as summer camps helps to spread the word about the BCCP and protecting the unique native plants and animals found in our community. Presentations and activities were provided this year at Steiner Ranch Elementary, Laurel Mountain Elementary and Oak Hill Elementary.
- Numerous opportunities were provided for college and university researchers and field classes to utilize the BCP as a living classroom. Texas State University at San Marcos and the University of Texas had projects or fieldwork on Travis County BCP lands in FY07.
- The County regularly provides internships and graduate study opportunities for college students working in the field of natural resources research and management. A Masters thesis entitled "Influences of Borders on Golden-cheeked Warbler Habitat in the Balcones Canyonlands Preserve, Travis County, Texas" was completed by Texas State University Graduate Student Cynthia Sperry, and is attached as Appendix T. University of Missouri-Columbia graduate student Jennifer L. Reidy completed her research entitled "Golden-cheeked Warbler Nest Success and Nest Predators in Urban and Rural Landscapes", included as Appendix U. Texas State University San Marcos graduate student Megan M. Johnston completed "A Survey for Potential Predators of the Golden-cheeked

Warbler (*Dendroica chrysoparia*) in Relation to Different Edged at the Balcones Canyonlands Preserve", found in Appendix W.

- Other researchers from across the country are studying the unique native flora located on the Preserve. Researcher Benjamin W. Van Ee published his work "Phylogeny and Biogeography of *Croton alabamensis* (Euphorbiaceae), a rare shrub from Texas and Alabama, using DNA sequence and AFLP data" in the peer-reviewed journal Molecular Ecology. A copy is attached as Appendix V.
- County BCP staff continues data collection and scientific study of the species protected by the BCCP, as well as impacts of land management practices both on the preserve and on surrounding non-protected habitats. Research data is presented for interested groups and at professional and scientific conferences, such as the Texas Land Trust Council Annual Meeting, and the USFWS and Environmental Defense sponsored Golden-cheeked Warbler Symposium.
- The County attempts to share information with the public through participation in community events throughout the area. In 2007, County BCP staff participated in the annual "Austin Karst Festival and Western Oaks Karst Preserve Open House"; "Nature Week" guided interpretive hikes at the Crossings, tours for the Lago Vista "Songbird Festival", and "Nature Day" at the Travis Audubon Society's Baker Sanctuary.
- County BCP Staff presented at the "Flying Wild" National Bird Educators Conference and provided guided interpretive hikes and late night "Owl Prowl" tours.
- The County works to advise landowners and others with mitigation needs such as real estate agencies, homebuilders and community associations.
- Travis County Natural Resources staff works closely with interested clubs, organizations, and youth-at-risk programs to educate and inform while also providing valuable hands-on work experiences on the Preserve. A Boy Scout Troop assisted Staff Biologists with a Preserve Clean-Up Project at the Canyon Vista Preserve tract. Fifteen Scouts spent a total of approximately 45 hours working to remove trash and debris from endangered species habitat.
- Travis County partnered with American Youth Works to restore remnant native prairie areas, manage woody species encroachment and assisted with Black-capped Vireo habitat manipulation and restoration activities. Approximately 1005 hours of work were performed by AWY on County in 2007.
- Students interested in careers in wildlife management and conservation regularly contact County Staff to discuss educational, internship and career opportunities. A student from Westlake High School spent a day with County Biologists learning

more about professional opportunities and seeking guidance from County Field Biologists.

- Informing, evaluating, and problem-solving issues such as alternate mitigation opportunities, acquisition strategies, and cooperative land management strategies with individual landowners, developers and others.
- County BCP Staff regularly coordinates and advises on land and habitat management topics with local landowners such as the Steiner Ranch Trails Committee and the Volente Neighborhood Association.
- The County works closely with partner agencies to address common safety concerns, and has worked to familiarize emergency responders with Preserve tracts within their jurisdictions.
- The County utilizes various media opportunities to inform the public about issues related to the Preserves, such as purchase of new Preserve lands, receipt of federal HCP land acquisition grants, and the negative impact of non-native wildlife on ecosystem health.
- Staff provided presentations and/or guided tours of Preserve lands for the BCCP Citizens Advisory Committee, Home Owners Associations and other interested groups.
- County Staff provided presentations for the University of Texas Law School, the Travis Audubon Society, Municipal Utility District #5 Board of Directors, the Canyon Mesa Home Owners Association Annual Meeting, the Apache Shores Property Owners Association Annual Meeting, Steiner Ranch Home Owners Association and others.
- BCP Staff is regularly called upon to describe cooperative approaches to compliance with the Endangered Species Act and discuss Habitat Conservation Planning for interested parties such as the Williamson County Foundation, Williamson County Parks Department, the Hays County Parks Advisory Committee, and the Hays County Citizen and Scientific Advisory Committees.
- County BCP Biologists provided training regarding rare plants, endangered species, and natural and cultural resource protection for other County Departments, including staff responsible for assisting in management efforts on County Parks and Open Space lands.
- County Staff continued finalizing revisions of the BCP Land Management Plan, and anticipates submitting a final draft to the BCCP Coordinating Committee and the USFWS in early FY2008.

The Lower Colorado River Authority

Management activities for the three LCRA preserves continued to focus on natural resource research, access management, and stewardship promotion. Additionally, this FY LCRA has begun work on a previous habitat restoration project.

Westcave

- LCRA staff conducted Golden-cheeked warbler surveys this year at Westcave. Five territories were delineated, matching results from previous years' surveys. Additionally, one female and no juveniles were observed. Five visits were made, totaling 13.6 hours.
- Preserve staff hosted 7511 students, teachers, tourists, researchers, and nature-enthusiasts, and gave 445 programs (includes information through November 2007).

McGregor

- Golden-cheeked warbler surveys were conducted at McGregor by temporary staff biologists this year. Six visits totaling over 33 hours were spent surveying for Golden-cheeked warblers at McGregor Preserve. Once a male warbler was observed, presence was assumed and survey staff turned their attention to unoccupied habitat. At least 16 and possibly 19 males were observed as well as one female. This number is comparable to 2005 and 2006 data.
- A karst survey was conducted at McGregor this year. Four epikarstic features were found as well as one feature that may prove significant if further investigation is conducted.
- Deer harvest was conducted at McGregor this year. Two deer were taken off the property during 1 harvest date by lethal means. Harvest effort was reduced due to inclement weather.
- LCRA staff continued to work with the Comanche Trail Community Association to promote local support of land management, animal management, and stewardship efforts on the preserve. The permit renewal training was held October 17 and 20, 2007 for new or returning CTCA McGregor Good Neighbor Program permittees. There are currently 26 permitted McGregor Good Neighbors. The active participation of the permittees continues to be an asset to preserve management. Individuals notify LCRA staff about trail conditions, access concerns, and general preserve status, as well as make suggestions for additional cooperative efforts between the CTCA and the LCRA. Nine new property owners joined the program to learn about the BCCP preserve system "in their backyards.

- LCRA staff continued to conduct routine property surveys to identify and address maintenance needs and access issues. Activities included walking the preserve's perimeter, mending small sections of fence, and installing perimeter signs at strategic locations to discourage trespass. One letter regarding trespass was issued to an adjacent property owner.

Wheless

- Golden-cheeked warbler surveys were not conducted at Wheless this year.
- Biologists from the City of Austin (COA) continued surveys on Jollyville salamanders at Long Hollow Creek. Main focus was mark and recapture surveys by COA and contract staff. Over 1300 salamanders were marked.
- Wheless was also included in a Section 6 Grant project for a dye trace study, conducted by COA staff.
- A karst survey was conducted at Wheless this year through contracted staff. Over 125 karst features were mapped of which 34 features were geologically evaluated. Three of the 34 were eligible for injection for the dye trace study. One cave was named Secretus Hole for the high number of cave crickets found, in addition to several other cave invertebrate species.

- LCRA staff continued to conduct routine property surveys to identify and address maintenance needs and access issues. Activities included walking the preserve's perimeter, mending small sections of fence, and installing perimeter signs at strategic locations to discourage trespass.
- Approximately 104.5 acres in the northern part of the study area is currently being managed to create BCVI habitat. It was initially treated in January and February 2002, using a flail mower to remove most woody vegetation. Vegetation sampling was conducted last summer and a burn was conducted October 3, 2007 at the restoration site. Recovery of the native grasses to date has been very good with an estimated 90% control on re-growth juniper on the area.
- Feral hog activity was noted around sensitive areas providing habitat to the Jollyville salamander. Hog trapping is being conducted; however, no recent sign of feral hogs has been seen indicating a moving, seasonal population.

Monitoring Highlights

LCRA temporary staff performed surveys at McGregor and Wheless Preserves. Survey style followed COAs enumeration technique. Presence of females, nesting activity, and

juvenile disbursement were noted as encountered. Occurrences were mapped with a GPS unit. Following are brief synopses of survey results.

McGregor

Eighteen visits totaling over 115 hours were spent surveying for Golden-cheeked warblers at McGregor Preserve. At least 12 and possibly 15 males were observed. No females but two sets of fledglings were also observed. This number is down from last year (See Appendix L).

Wheless

Forty-five visits totaling over 226 hours were spent surveying for Golden-cheeked warblers at Wheless Preserve. At least 93 and possibly 105 males were observed. Females were observed on 19 occasions, although never with young. Fledglings were observed on seven occasions with males (See Appendix M).

The Nature Conservancy of Texas

Barton Creek Habitat Preserve

Science/Stewardship

This spring, we conducted annual point-count surveys of the Golden-cheeked Warblers (GCWA) and Black-Capped Vireos (BCVI) to determine population densities. Brown-headed cowbirds were actively trapped and shot this year in an effort to help out nesting success of the BCVI and GCWA.

The GCW data collected was analyzed against previous year's data by Conservancy scientists. The data concluded that a population trend was not found at the Preserve and Warbler abundance has fluctuated over the last six years. Two male BCVI were documented on the Preserve for the 2007 season while none were observed during the 2006 season and two were observed during the 2005 season. The 2007 season surveys were conducted using the point-count method while in previous years surveys were conducted by direct observation.

Hunting has also been continued on the preserve to manage the white-tailed deer population in an effort to reduce browse and increase recruitment of Texas Oaks.

Austin Youth River Watch monitored the water quality of Barton Creek at the preserve again this year. No anomalies were found.

The Ladybird Johnson Wildflower Center also collected seeds on the preserve for the Millennium Seeds Bank Project.

NRCS conducted surveys on the preserve looking for the exotic Asian gypsy moth after a specimen was found in Travis County in March of 2006.

A prescribed fire was set on 125 acres of the preserve in February. Due to droughty conditions and burn bans in previous years this was the first burn on the property since 2002. Currently, the Preserve has one burned lined up for the upcoming winter season and three more at a future date of approximately 250 acres total.

Education/Outreach/Volunteers
We have had numerous groups volunteering at the preserve over the past year. Projects included trash pickup along the highway frontage, fence removal, trail maintenance/ extension, bird surveys, habitat management and vegetation surveys.

We had a total of 786 volunteer hours and approximately 775 people at the preserve for volunteering, educational purposes, and research.

The City of Lakeway
Schramm Ranch
The City of Lakeway's written report submitted to comply with the terms of USFWS permit #PRT-812696 is attached as Appendix H.

Travis Audubon Society
Baker Sanctuary
Access and trail maintenance

- The Sanctuary opened on February 3rd. The Sanctuary was closed on October 21st, at which time the gates were locked and the Sanctuary Steward, John Wilcox, posted closure notices.
- On March 10th, the Baker Sanctuary hosted the third in a series of BCP Hike and Lectures. TAS Sanctuary Chair Terri Siegenthaler and Volunteer Guide Kathy McCormack led approximately twenty people on a tour of the Sanctuary. After the hike, Marcie and John Wilcox gave those individuals that were interested a preview of the Jackie Arnold Education Center.
- The annual Open House was combined with the ribbon cutting for the completed Jackie Arnold Education Center at the Baker Sanctuary, which was held on March

31st. In all, 97 people signed the registration sheets for both events that took place from 9:00 AM until 4:00 PM.

- On June 2nd, 25 people attended an event dedicating a plaque to Ed Kutac, Stewart and Sarah Harris that honored their efforts that led to the acquisition of the Baker Sanctuary.
- On July 12th, the Baker Sanctuary hosted the summer camp field trip for twenty children and three adults from the Georgetown Montessori School.
- On August 4th, 15 people observed flora and fauna at the Nature Day field trip, hosted by the Baker Sanctuary.
- John Wilcox trimmed low hanging, freeze damage and encroaching brush from 10 miles of trails, access and service roads and hunter's shooting alleys.
- During the 2007 visitor season, the Sanctuary had 292 registered visitors, including those visitors that attended special events.

Acquisitions

- On March 1, 2007 TAS signed the warranty deed acquiring the 9.83 acre Ruth Fredericksen Tract. This property is located adjacent to the Original 94 acre Sanctuary and the City of Austin Lime Creek Tract.

Boundary control

- John Wilcox monitored the Sanctuary boundaries and visitor access.

General maintenance

- John Wilcox picked up trash on the Sanctuary right-of-way 16 times.
- The Sanctuary Stewards called Travis County work crews out 5 times to pick up trash dumped on the right-of-way,
- John Wilcox mowed and trimmed the Headquarters Area, Parking Lot and around the Baker Cabin 17 times.
- John Wilcox hauled trash out of the woods to the Travis County Solid Waste Transfer Station, repaired and maintained Sanctuary equipment and contracted to have 18 yards of trash hauled from the Sanctuary that included six dilapidated deer blinds and ten rotten benches.
- John Wilcox hauled and spread 6 tons of limestone road base on Sanctuary access roads and installed corrugated tin on the Pump House.

Problem animal control

- During the 2007-2008 WTD season, John Wilcox managed seven deer hunting leases for gun hunters. As of December 16, 2007 8 deer (4 bucks three points or more, 2 spike bucks and 2 antlerless deer) have been harvested. All hunters on the Sanctuary filled out the TAS Hunting Application and signed off on the TAS Liability, Indemnity and Release form as well as the TAS Hunting Regulations.
- John Wilcox began the season with six BHCO decoys (3 males and 3 females) and trapped an additional 34 (18 males, 16 females) Brown-headed Cowbirds. One non-target capture and no non-target fatalities were recorded.
- Feral hogs have not been a problem on the Sanctuary this year.

Endangered species

- TAS member Cindy Sperry surveyed the TAS-BS 100 acre GCW plot in 2007. Based on compiled observations, including counter-singing and the presence of females and fledglings, it appears that at least 20 GCWA males established territories within the plot boundaries and 7 more occupied areas crossing of near plot edges. This is comparable to 2006 survey results showing 22 in-plot territories and 4 edge territories. However, Cindy was less successful this year in confirming paring and mating success. She was only able to confirm the presence of a female and/or fledglings in 9 in-plot territories and 1 edge territory, compared to last year's findings of 19 in-plot territories and 4 edge territories. For 2007, 16 fledglings were detected in 6 in-plot territories and 1 fledgling was detected in an edge territory. This compares to her 2006 counts of 14 fledglings in 11 in-plot territories and 3 fledglings in 2 edge territories. No Brown-headed Cowbirds were detected in the 100-acre plot although they are commonly found near the Steward's residence and no evidence of brood parasitism was found in the survey plot.

Research

- On February 15th, Lisa O'Donnell (City of Austin Watershed Protection and Development Review Department) and John Wilcox conducted a brief Jollyville Plateau Salamander (JPS) survey. Low flow from the Baker Spring was observed and only one medium sized salamander was found in the pool below the spring.
- On August 14th, John Wilcox met with Bev Shade. She is a geologist with ZARA Environmental, LLC and is working with the City of Austin conducting dye-tracing tests to delineate groundwater flow paths of our area springs. The

developed information will assist in effective management of area salamander populations. John Wilcox showed her both Baker and Audubon Springs and she placed dye retrieval packs in each spring to build base line data. On August 21st, she returned and replaced the dye packs in both springs in advance of the dye injections that took place on the LCRA Wheless tract, which happened on 8/23 and 8/24. Bev and her associate, Brian Cowan took turns retrieving and replacing the dye retrieval packs and taking water samples on, first a weekly basis, then every two weeks thereafter. The interim results of the dye tracing project detected rhodamine WT dye in Audubon Springs in the first set of samples collected on August 28, 2007 five days after injection, however no dye was detected in the water samples or charcoal packs placed at the Baker Springs. The distance from the injection site to the Audubon Spring is over 400 meters, giving a minimum groundwater velocity of over 3 meters/hour. The flow at the spring was about 1 liter/minute when the project started and by mid-September flow was almost imperceptible. However, the rhodamine WT peak at this site was very strong. Analysis ranges between 0 and 1,000 intensity units and the rhodamine WT peak at the Audubon Springs was over 500 intensity units. The implication of this strong peak, measured so soon after injection, is that the dye was carried to the water table by the 6,000 gallons of flush water, and the flush water created enough gradient in that location to push the dye to the nearby spring. In a second set of samples, rhodamine WT had a strong peak in the charcoal packet and the dye was measured in the water sample at a concentration of 36.4 ppb. In the third set of samples, the dye had a strong peak in the charcoal packet and was measured in the water sample at a concentration of 24.8 ppb.

The Committee for Wild Basin Wilderness, Inc.

Wild Basin Wilderness Preserve

Preserve Management

The Wild Basin staff implements the policies and priorities as set forth by the Committee for Wild Basin Wilderness, Inc. in accordance with BCP and Travis County rules and regulations. The Committee's mission is stewardship of the urban wilderness of Wild Basin, and to promote land preservation and environmental education. Wild Basin's vision is to become Austin's urban wilderness education treasure, serving as the gateway to the Balcones Canyonlands.

In 2007, staff devoted their time to the day-to-day management of the preserve, including scheduling and supervising all educational programs, land management activities and programs

and other work performed within its boundaries. They also supervised, coordinated and trained all volunteers and tour guides. All staff renewed their CPR and First Aid training and certifications in 2007.

Wild Basin's education and land management programs offered to schools and to the community are designed to promote awareness of environmental preservation, and encourage wise stewardship of the land. Through guided hikes, specialized study and volunteer opportunities, visitors to Wild Basin discover the many pressures on the natural quality of the preserve. From outside the preserve, residential and commercial development brings invasive, non-native plants and soil and watershed pollution. In addition, domestic animals, air, sound and light pollution can impact the preserve as well. Through outdoor study, experimentation, and hands-on opportunities, Wild Basin continues to bring awareness and an appreciation of the natural environment to the Central Texas community.

Educational and Outreach Programs

Volunteers donated approximately 900 hours of their time to the preserve's Educational and Educational Outreach Programs, which were supported by grants from the Moody Foundation and the Tuktawa Foundation. The following summarizes these programs:

1. *Environmental Education & Interpretation –*
    a. School Tours – Over 2,200 students from public, private and parochial schools, as well as a small number of home-school groups in Bastrop, Hays, Travis and Williamson counties attended education programs at the preserve in 2006. Group size limits are restricted and held to maximums of 64 per visit. Over 440 volunteer hours were donated in assisting in these education programs.
    b. Family & Public Programs –599 adults and children attended public programs at the preserve; programs offered in 2007 again including Moonlighting, Stargazing, Flintknapping, Indian Lore, and Weekend Hikes. Over 195 volunteer hours were donated to enable Wild Basin to host these programs.
    c. Maplewood Elementary – This AISD elementary school has an after-school science club called Caterpillars & Tadpoles which is in its fifth year with Wild Basin staff as volunteer educator. This year, 15 students learned about the life cycle through this interactive program led by Wild Basin educator, Sally Scott.

d. Wild Afternoons – Thanks to a generous grant from the Moody Foundation, the Wild Afternoons program enabled 380 children to visit the preserve, enjoy guided hikes, and achieve youth group-specific goals. The participants included 95 students whose hikes were sponsored by grant-funded scholarships. Groups participating in the program included Girl Scouts, Boy Scouts, Communities in Schools, Big Brothers Big Sisters, Camp Fire USA and Spiral Scouts. 168 volunteer hours were donated to this program.
e. Tiny Footprints – In 2007, this program enabled more than 250 young children, ages 3-5, to experience high quality, small-group guided hikes designed specifically for early learning. Over 85 volunteer hours were donated to assist with these tours for very young children.

2. *Family & Public Programs and Group Tours –*
    a. Moonlighting and Stargazing – In its 19th year, the Moonlighting and Stargazing program again provided 2 public tours each month, guided by volunteers from the Austin Astronomical Society. Despite the inclement weather that was common in 2007, 247 visitors learned how to use telescopes and interpret the night sky.
    b. Other Tours - Other public tours led by Wild Basin volunteers and staff included Wild Basin Walks, Indian Lore, Flintknapping, Fossilology, and Owl Prowl.
    c. BCP Hike & Lecture Series – On April 14th, Wild Basin hosted 2 public hikes as part of the BCP Hike & Lecture Series. Approximately 15 visitors, guided by volunteers, were introduced to Wild Basin and the BCP, and one group even spotted a Golden-cheeked Warbler.

3. *Training Programs* -
    a. Guide Training – In 2007, Wild Basin once again offered 2 sessions of Weekday & Weekend Guide Training for 14 new volunteer trail guides. 40 hours were donated by key preserve volunteers in assisting staff with training.
    b. Tiny Footprints Training – In 2007, 2 sessions of Tiny Footprints Training were offered for 5 new volunteer Tiny Footprints guides. 16 hours were donated for training.

c. Other – Community Service Restitution volunteers continued to receive educational training in 2007 as part of their orientation to the preserve before proceeding with work assignments.

4. *Public Outreach* –
    a. Austin Museum Day – Wild Basin participated in the city-wide free museum day with a Wild About Insects-themed exhibit and hike. Over 450 people participated in this program, which was a success due to almost 100 volunteer hours donated to the program.
    b. Discover Nature – Wild Basin had a native plants exhibit at this new University of Texas program wherein Austin families explored the natural world.
    c. Wee Trails – Wild Basin staff held the Wee Trails program at the Lucy Read School, where approximately 400 children discovered nature in their own schoolyard.
    d. Dia De Los Ninos – In 2007, Wild Basin once again had an exhibit at Dia de los Ninos. This bilingual event gave an estimated 2,000 children the opportunity to discover Wild Basin.

5. *Affiliations & Publications* –

Association of Nature Centers of America (ANCA)
Austin Astronomical Society
Austin Independent School District
Austin Museum Partnership
Bastrop Independent School District
Big Brothers Big Sisters
Camp Fire USA Balcones Council
Capital Area Council, Boy Scouts of America
Communities in Schools
Lake Travis Independent School District
Lone Star Girl Scouts
Maplewood Elementary
Moody Foundation
Spiral Scouts
University of Texas at Austin
Tuktawa Foundation

The preserve staff continued writing Wild Basin's column in our local weekly newspaper, the Westlake *Picayune's* "Distinct" section.
Each quarter, Wild Basin staff produced the *Wild Ways Newsletter*.

Land Management Activities and Programs

Wild Basin Wilderness Preserve board member Peggy Corkran donated 72 hours of her time to the preserve's land management and Board activities in 2007. She stepped down as a member of the Board of Directors and as a member and chair of the Land Management Committee at year's end. We are most grateful for her service.

Among the highlights of our Land Management Activities and Programs in 2007 were the following:

Land Management Vision and Charges (a restatement for overview purposes)

Here is that Vision:

> Our vision is to preserve a piece of the Texas Hill Country in its native condition and to educate school children and the general public in the natural laboratory of Wild Basin Preserve by:
>
> - Managing and, where necessary, restoring a mosaic of habitats that are indigenous to Wild Basin, including (but not limited to) oak-juniper woodlands, riparian areas, semi-open grasslands and cedar breaks (please note that "juniper" and "cedar" refer to the same plant species: *Juniperus ashei*)
> - Protecting native biodiversity
> - Protecting habitat for the federally endangered Golden-cheeked warbler
> - Protecting habitats to support threatened and rare plant and animal species
> - Controlling non-native and invasive species
> - Protecting soil profiles and unique geologic features
> - Monitoring water quality relative to watershed inputs, runoff, and erosion
> - Protecting prehistoric and historic cultural sites
> - Managing a trail system that presents to visitors a variety of habitats while leaving a majority of the preserve undisturbed
>
> Charges to the Land Management Committee:
>
> - Provide expert advice to the land management program. Review plans for and recommend actions regarding proposed changes or projects that would result in alteration or possible adverse impacts to the preserve.

- Ensure that in all our planning and decision-making processes, the health of Wild Basin Preserve is the highest priority. Above all, do no damage.

Land Management volunteers donated 587 hours of their time to the preserve's land management efforts in 2007. The following summarizes these efforts as performed both by staff and by volunteers:

Habitat – Mosaic Assessment

From January and throughout the year, he Land Management Committee has assessed various of our habitat components to develop an overall preserve management plan for the future. So far, we have analyzed the following components: riparian zones/features; GCWA; Texas Madrone, invasive plants, and plant species of interest/concern.

Biological and other Surveys

1. Golden-cheeked warbler (GCWA – *Dendroica chrysoparia*)
   Our program manager Joe Beach performed presence/absence surveys for this federally endangered songbird in the preserve. Between 8 March and 8 June 2007, he recorded sightings of six (6) to seven (7) mating pairs of GCWA during nine (9) survey days, totaling 51.25 hours. One fledgling/juvenile GCWA was sighted together with each of the mating pairs. This data represents a record high number of GCWA sighted in the preserve:
   a. slightly more than twice the total number of observed individuals in 2006.
   b. a potential increase of two (2) breeding territories since 2005.

   For the full GCWA report, see Appendix.
2. Bee Creek Watershed
   a. Khabele school students assisted with a native plant survey in North Hollow;
   b. TCEQ and LCRA personnel assisted with water-quality testing in North Hollow.
   c. Preserve staff and volunteers pursued information related to (1) commercial development in our contributing watershed west of Loop 360, namely projects by Brandywine Reality and the Munson Park Management, and (2) home sites on our southern perimeter.
3. White-tailed deer (O*docoileus virginianus*)
   For the first time in recent memory, Wild Basin staff successfully performed a census of the preserve's deer population. Data analysis reveals approximately one (1) deer/acre. Normal regional population density is considered one (1) deer/20 acres. TPW requires a second year's data for a removal permit.

We appreciate the technical assistance from TPW and Travis County Wildlife biologists. For raw data spreadsheet, see Appendix.

4. Texas Madrone (*Arbutus xalapensis*)
   With the assistance of Dr. Bob Harms, the UT-Austin Herbarium has recognized our population of eighteen (18) trees as the easternmost of the species within the U.S. (It represents the only Madrone species in Texas.) We have documented individual trees by GIS.
5. Shooting Star (*Dodecatheon meadia*)
   In April, a graduate student from Washington University in St. Louis, MO performed research on our Shooting Star population. He collected data and tissue samples under a BCP permit and preserve staff supervision.
6. Plant Inventory
   Two (2) newly observed plant species were added to our plant inventory:
   a. Water primrose (*Ludwigia octovalvis/Onagraceae*)
   b. Dwarf palmetto (*Sabal minor/Arecaceae*)

   For complete inventory, see Appendix
7. Amphibian Watch
   Volunteer Roger Myers provided data from his nocturnal surveys, recording four (4) frog species, March – September.
8. Photo Points – Photographs were taken seasonally by preserve interns at each of the ten (10) photo points in the preserve. This project began in 2005.

Public Outreach

1. Balcones Canyonlands Preserve (BCP) Land Managers - Again in 2007, preserve staff attended and participated in all meetings of the BCP Land Managers informal group.
2. Facilities Exchange Consultation – Our staff traded visits and facilities/trail tours with the staff of the LCRA's McKinney Roughs Park.
3. Community Groups
   a. Central Texas Trail Tamers (CTTT) – CTTT again hosted bi-monthly meetings open to the public at the preserve. Their volunteers contributed 25.5 hours to trail maintenance projects.
   b. Austin Geological Society (AGS) – 2007 marked the second year that Wild Basin had a staff representative attend AGS meetings and the AGS Annual Field Trip. Staff member Joe Beach, a geologist and member of AGS, represented the preserve to AGS.

c. Bright Leaf Preserve – Staff members Sally Scott and Joe Beach continued their terms on the Board of the Friends of Bright Leaf Preserve.
d. Capital Area Master Naturalists (CAMN) – 2007 marked the second year that Wild Basin has had a staff member, Sally Scott, on the Board of Directors of CAMN. Their volunteers donated 81.5 hours of their time to the preserve.
e. Native Plant Society of Texas, Austin chapter (NPSOT) – Again in 2007, Wild Basin hosted the regular monthly meetings of the Austin chapter of this statewide group. NPSOT volunteers donated approximately 16 hours of time to the preserve.
f. Texas Ornithological Society (TOS)/ Christmas Bird Counts – 2007 marked the first year that Wild Basin staff, Sally Scott, participated in the Austin Christmas Bird Count and recorded a rare/unusual species (Tufted Titmouse – *Parus bicolor*).
g. Balcones Canyonlands National Wildlife Refuge – Again in 2007, preserve staff, Sally Scott, coordinated the children's activities for the refuge's Bridges-to-Birding program and Spring Songbird Festival, which is sponsored by Travis Audubon Society.

Affiliations and Publications

The preserve in 2007 continued development of relationships and partnerships with like-minded groups and selected individuals in the community. These relationships and partnerships were pursued to strengthen the preserve's land management and educational activities. They include the following:

Ann Molineux, PhD
Austin Astronomical Society
Austin Gem & Mineral Society
Austin Geological Society
BCP Land Managers
Balcones Canyonlands National Wildlife Refuge
Bob Harms, PhD
Capital Area Council, Boy Scouts of America
Capital Area Master Naturalists
Central Texas Trail Tamers
City of Austin Water Utility Wildland Conservation Division
Lower Colorado River Authority

Marshall Johnston, PhD
Meritage Homes
Native Plant Society of Texas, Austin chapter
PBS & J
REI
Rob Roy on the Canyon Neighborhood Association
Stock Lumber
Texas Commission on Environmental Quality
Texas Forest Service
Texas Ornithological Society
Texas Parks & Wildlife
Travis Audubon Society
Travis County Transportation & Natural Resources
University of Texas Archeological Research Laboratory
University of Texas Bureau of Economic Geology
University of Texas Nonvertebrate Paleontology Laboratory
Westlake Chamber of Commerce
Westlake Hills City Inspector
Westlake Hills Fire Department
Westlake Picayune newspaper

Preserve staff wrote a column for the local weekly newspaper, the Westlake *Picayune*. Originals and copies of these articles are on file in the main offices in the EEC. Land management staff members also wrote articles for the preserve's *Wild Ways* newsletter.

Visitation

In 2007, preserve staff tracked the number of self-guided visitors, using the two (2) trailhead sign-in boxes located near the Environmental Education Center (EEC). While this is by no means a perfect record of every visitor on a self-guided hike, it at least provides us baseline data of 3127 recorded this year (1367 children and 1760 adults). See Appendix for breakdown of visitors by month.

Habitat Maintenance and Restoration

Please note that land management activities use only native Ashe juniper for trail/water bars and native limestone for boulders, steps and gravel where needed on or off the preserve's trails. No old-growth junipers or other native hardwoods are cut down in the

preserve for such use. All trail maintenance and land management activities avoid impact or disturbance of the preserve's cultural/archeological resources.
Total volunteer time: 587 hours.

1. Trail Maintenance
    a. General - all 3.2 miles of trails in the preserve received maintenance. (No trail maintenance was performed during GCWA breeding season (15 March – 15 July) in/on those sections of the trails where the warblers were sighted.) This work included maintaining, replacing and/or installing thirteen (13) new water bars, building six (6) steps in steep areas, building and maintaining various diversion channels to carry water off the trails, replacing/repairing several creek-crossing step stones following flashflood events, clearing downed trees and fallen limbs from trails, rebuilding/repairing trail surfaces, pruning trees and brush from trail corridors and resetting forty (40) step stones in muddy portions. Volunteers from the community and area high schools donated 250 hours of their time. Under staff supervision, selected CSR volunteers also performed trail maintenance.

       Pond Trail remained closed for the second year due to silting problems at the retention pond.
    b. Specialized
        i. Eagle Scout candidates continued to perform valuable land management projects on a volunteer basis for the preserve. They were supervised by staff in consultation with their scout leaders and parents:
            (a) a 75-yard fence-rail barrier
            (b) Twenty-seven (27) new trail signs.
        ii. College interns Kate Krueger (UT-Austin), Kate Wilkins (UT-Austin), and Liz Huster (Concordia University) volunteered 196.75 hours of their time assisting preserve staff in various land management activities.
2. Restoration
    a. General - Preserve staff and volunteers continued to aggressively remove invasive, non-native species such as Japanese honeysuckle, Chinese tallow, chinaberry, pyrocantha, ligustrum, nandina, King Ranch bluestem, Johnson grass, vitex, Georgia Cane and others. With herbicidal-treatment assistance from Travis County biologists Paul Fushille and Amber

Gosselin, preserve staff and volunteers removed nearly all remaining Georgia cane (*Arundo donax*). The Native Plant Society of Texas also assisted in this effort and donated native plants, seed and labor for revegetating this, and other affected, areas. Overall, volunteers donated 337 hours of their time performing habitat restoration in 2007. For excessive woody-plant debris due to cutting for restoration or fire-defense purposes, Travis County Road and Bridge supplied an industrial chipper. Most resulting mulch is used for preserve projects.

b. Cultural resources – Carolyn Spock of UT's Archeological Research Laboratory consulted with preserve staff on best practices and methods for ensuring the protection and integrity of cultural/archeological resources in the preserve.
c. Deer exclosures – in consultation with Texas Parks & Wildlife and Travis County biologists, preserve staff continued emplacing "deer exclosures" of hog wire/wire cages around stands of native trees and shrubs (such as Shin oaks and Texas red oaks, escarpment black cherries, Texas persimmon, coralroot orchids and twisted-leaf yucca, among others) to prohibit excessive browse by deer and other animals.
d. Fire ants – only one (1) nest of these invasive, non-native insects was found and treated on the preserve this year.
e. Wildfire Defense – In consultation with Texas Forest Service Urban-Wild Lands Interface specialists, preserve staff continued performing recommended measures related to creating a defensible-space around the EEC and along the driveway perimeter. Retired Austin Fire Department officer Steve Baker volunteered 18 hours assisting preserve staff and directing volunteers in these endeavors.
f. Conservation Easement – ending a four year management contract, the Wild Basin Board transferred the 8.51 acres Dell conservation easement to the Hill Country Alliance.

Security

1. Emergency Procedures – preserve staff compiled an emergency policies and procedures manual to be followed in case of emergency on/adjacent to/threatening the preserve. This manual covers staff, volunteers and visitors at the preserve. Please see Appendix for the complete manual.

2. Fence construction – in cooperation with Travis County staff and their subcontractor for fence construction, preserve staff coordinated the completion of a secure fence in January 2007 along the entire southern boundary of the preserve.
3. General – preserve caretaker continued to provide overnight security by patrolling the grounds and discouraging overnight illegal entry into the preserve by locking the gate overnight. Sonitrol was once again contracted to provide silent alarm services and notification to staff in event of attempted break-ins to the EEC.
4. Visitors – signage and interpretive media warned about
    a. fire danger
    b. personal safety in extreme heat
    c. potential encounters with wildlife and related precautions.

Building Infrastructure

1. Environmental Education Center (EEC)
    a. General - under the direction of preserve staff, community service restitution (CSR) volunteers regularly cleaned and maintained the EEC's interior and performed exterior maintenance work on an as-needed basis. When required, other maintenance was performed by qualified maintenance professionals/technicians.
    b. Specialized – the EEC library was renamed the Founders Room in recognition of their extraordinary and continued services and efforts for the preserve.
2. Information Technology (IT) – staff enlisted the volunteer services of Mark Czigan, to stabilize and upgrade the EEC's IT and telephone infrastructure. Mr. Czigan donated 174.25 hours of his time in 2007.

Copies of research or investigative reports prepared during FY07

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City of Austin. 2007. Outreach Program. See Appendix G

City of Lakeway. 2007. Annual Report. See Appendix H.

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