Balcones Canyonlands Conservation Plan

2021 Annual Report

(October 1, 2020 – September 30, 2021)

USFWS Regional Section 10(a)(1)(B) Permit No. TE-788841-2

Travis County – City of Austin

Submitted by
The Balcones Canyonlands Conservation Plan
Coordinating Committee
January 2022

CONTENTS

BACKGROUND **1**

PERMIT REQUIREMENTS **2**

DEVELOPMENT ACTIVITY WITHIN THE PERMIT AREA **3**

MITIGATION CREDIT BALANCE **3**

PARTICIPATION CERTIFICATE ACTIVITY **4**

FUNDS COLLECTED THROUGH PARTICIPATION CERTIFICATES **5**

FUNDS COLLECTED THROUGH TAX BENEFIT FINANCING **6**

FUNDS EXPENDED FOR LAND ACQUISITION **6**

FUNDS EXPENDED FOR OPERATIONS AND MAINTENANCE **7**

LANDS DEDICATED TO THE BALCONES CANYONLANDS PRESERVE **8**

FY 2021 RESEARCH OR INVESTIGATIVE REPORTS **8**

PUBLIC USE, HABITAT AND WILDLIFE MONITORING, AND MANAGEMENT ACTIVITIES OCCURRING WITHIN THE BALCONES CANYONLANDS PRESERVE **9**

CITY OF AUSTIN 9

BARTON CREEK MACROSITE 14

BULL CREEK MACROSITE 14

CYPRESS CREEK MACROSITE 15

NORTH LAKE AUSTIN MACROSITE 15

SOUTH LAKE AUSTIN MACROSITE 16

WEST AUSTIN MACROSITE 17

FY 2021 BCP PARTNERS OUTREACH 18

TRAVIS COUNTY 19

LOWER COLORADO RIVER AUTHORITY 23

CITY OF SUNSET VALLEY 26

THE NATURE CONSERVANCY OF TEXAS ANNUAL REPORT FOR BARTON CREEK HABITAT PRESERVE 27

TRAVIS AUDUBON SOCIETY 28

LITERATURE CITED **28**

LIST OF TABLES

Table 1 - Species Covered by the Balcones Canyonlands Conservation Plan 1
Table 2 - Infrastructure Projects Mitigated Through the Use of Mitigation Credits in FY21 by Participating Agency 3
Table 3 - FY21 Projects Mitigated Through the Purchase of Participation Certificates 5
Table 4 - USFWS HCP Land Acquisition Grands Received by the Permit Holders, 1997-2010 6
Table 5 - Travis County and City of Austin FY21 BCP Land Acquisitions. 7
Table 6 - Annual FY19 through FY21 BCP Budgets (excluding land acquisition costs) for Permit Holders, the Managing Partners, and Cooperating Entities with Summary of Total Budgets since Plan Inception. 7
Table 7 - Management Status of City of Austin BCP Properties 9
Table 8 - City of Austin Monitoring and Management Activities on BCP Tracts within the Bull Creek Macrosite 11
Table 9 - City of Austin Monitoring and Management Activities on BCP Tracts within the Barton Creek, Cypress Creek, North Lake Austin, South Lake Austin, and West Austin Macrosites 12
Table 10 - City of Austin Monitoring and Management Activities on Karst Preserves 13
Table 11 - Summary of FY21 BCP Outreach and Education Activities 19
Table 12 - FY21 monitoring and management activities on Travis County-managed BCP tracts within the Bull Creek and North Lake Austin Macrosites. 20
Table 13 - FY21 Monitoring and Management Activities on Tracts Managed by Travis County within the Cypress Creek Macrosite. 21
Table 14 - FY21 monitoring and management activities on Travis County-managed BCP tracts within the South Lake Austin, Pedernales River, West Austin, Big Sandy Creek Macrosites and Cave Tracts. 22

LIST OF APPENDICES:

Appendix A *– City of Austin Development Permits Issued in the BCCP Permit Area for FY 2021*
Appendix B *– Travis County Development Permit Issued in the BCCP Permit Area for FY 2021*
Appendix C *– Balcones Canyonlands Preserve Properties by Macrosite*
Appendix D *– Balcones Canyonlands Preserve Properties by Management Agency*
Appendix E *– Balcones Canyonlands Preserve System Map*
Appendix F *– City of Austin FY 2021 Golden-cheeked Warbler (Setophaga chrysoparia) Monitoring Program*
Appendix G *– City of Austin FY 2021 Black-capped Vireo (Vireo atricapilla) Monitoring Program*
Appendix H *– City of Austin FY 2021 Springs Monitoring Report*
Appendix I *– Balcones Canyonlands Preserve Karst Monitoring and Management FY 2021 Report*
Appendix J *– FY 2021 Report on Monitoring of the Golden-cheeked Warbler (Setophaga hrysoparia) on Travis County Tracts of the Balcones Canyonlands Preserve*

Appendix K *- FY 2021 Report on Monitoring and Management of the Black-capped Vireo (Vireo atricapilla) on Travis County's Balcones Canyonlands Preserve*
Appendix L *–Travis County FY 2021 Jollyville Plateau Salamander Monitoring Report*
Appendix M *– FY 2021 Summary of Wildlife Management Activities on Travis County's Balcones Canyonlands Preserve and Select Parks*
Appendix N *– FY 2021 Travis County Balcones Canyonlands Preserve Non-*Native Plant Management Program
Appendix O *– Wild Basin Wilderness Preserve 2020-2021 Annual Report*
Appendix P – City of Sunset Valley Gaines Greenbelt *2021* Annual Report
Appendix Q *– Travis Audubon Society Baker Sanctuary 2020-2021 Annual Report*
Appendix R *– City of Lakeway Schramm Ranch Report*
Appendix S1 *– FY 2021 Quarterly BCP Partner Reports – City of Austin*
Appendix S2 *– FY 2021 Quarterly BCP Partner Reports – Travis County*
Appendix S3 *– FY 2021 Quarterly BCP Partner Reports – LCRA*
Appendix S4 *– FY 2021 Quarterly BCP Partner Reports –Outreach*
Appendix T1 *– Westcave 2021 GCWA Report*
Appendix T2 *- Cave Drip Monitoring FY2021 Report*
Appendix T3 *- FM2222 Bypass Study*
Appendix T4 *- Tawny Crazy Ant Study BCP Jollyville Unit*
Appendix T5 *- Pipeline Cave Tracing*
Appendix T6 *- 2021 Annual Summary of Carbon Dioxide Monitoring in Two BCP caves*
Appendix T7 *- 2021 Summary of Cave Management Activities at Pennie's Cave*
Appendix T8 *- Houston Migratory Bird Stopover Research Summary*
Appendix T9 *- Delmore Humingbird Report*
Appendix T10 *- Karst Preserve Friends Village at Western Oaks Karst Preserve*
Appendix T11 *- Airmens Cave Hydro Study 2021*
Appendix T12 *- Flint Ridge Geochem Analyses 2021*
Appendix T13 *- Turkey Creek Trail Use Report*

Background

On May 2, 1996, the City of Austin and Travis County were jointly issued a 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 (USFWS, 1996a). The 30-year permit covers approximately 561,000 acres in western Travis County identified in the Habitat Conservation Plan and Final Environmental Impact Statement (HCP) (USFWS, 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 (Table 1).

Table 1 - Species Covered by the Balcones Canyonlands Conservation Plan

Common name	Scientific name	Status
Black-capped vireo	*Vireo atricapilla*	Delisted*
Golden-cheeked warbler**	*Setophaga chrysoparia*	Endangered
Tooth Cave pseudoscorpion	*Tartarocreagris texana*	Endangered
Tooth Cave spider	*Neoleptoneta myopica*	Endangered
Bee Creek Cave 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 concinna*	Species of Concern
Spider	*Neoleptoneta devia*	Species of Concern
Spider	*Eidmannella reclusa*	Species of Concern
Harvestman	*Texella spinoperca*	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
Pseudoscorpian	*Tartarocreagris 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

*Previously listed as Endangered, the Black-capped vireo was delisted in April 2018

**Scientific reclassification in 2011 from *Dendroica chrysoparia* to *Setophaga chrysoparia*

Permit Requirements

The City of Austin and Travis County (the Permit Holders) are required to assemble and manage a minimum of 30,428 acres of suitable habitat for the golden-cheeked warbler and the black-capped vireo. Additionally, Permit Holders are required to protect and manage populations of canyon mock orange and Texabama croton. The Permit Holders are also required to acquire, manage, and/or ensure protection for 35 karst features which support populations of six species of endangered karst invertebrates and an additional 27 karst features that are known to harbor 25 karst-specific species of concern. This system of managed and protected habitats is known as the Balcones Canyonlands Preserve (BCP or Preserve). The locations of habitat areas and specific karst features proposed for protection are delineated in the HCP (USFWS, 1996b).

Agencies or organizations which enter into formal agreements with the Permit Holders in order to manage designated Preserve lands in accordance with the BCCP are considered Managing Partners. The Lower Colorado River Authority (LCRA) and The City of Sunset Valley are both Managing Partners. The LCRA manages approximately 400 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. The City of Sunset Valley entered into a BCP Managing Partner Agreement in 2014 and designated 21.585 acres, known as the Gaines Greenbelt, to be included as part of the BCP. The Gaines Greenbelt mitigates for impacts to golden-cheeked warblers, black-capped vireos, and karst species due to maintenance, improvement and public use of the Gaines Greenbelt Trail, and future impacts associated with social trail closure, fencing and signage.

The Nature Conservancy of Texas (TNCTX) and the Travis Audubon Society (TAS) also manage lands for public and environmental benefit within the BCP. In April of 2015 Travis County purchased a conservation easement over 672 acres of the Travis Audubon Society Baker Sanctuary.

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

- 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 BCP operations and maintenance
- an updated map of BCP lands
- a summary of public use and habitat management activities within the BCP
- copies of all research and investigation reports prepared within the last year.

Development Activity within the Permit Area

The City of Austin development activity report for Fiscal Year 2021 (FY21), which details building permits issued by the City of Austin west of Loop 1 within the Permit area, is located in Appendix A.

The Travis County development activity report for FY21, which details building permits issued by Travis County in precincts 2 and 3 within the Permit area, is located in Appendix B.

Mitigation Credit Balance

The City of Austin's BCP 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/EIS (U.S. Fish and Wildlife Service, 1996a and 1996b). BCP acreage that was originally mitigation under the BCCP Alternative Determination Process, or another Section 10(a) or Section 7 permit, is not included in this mitigation bank acreage total. 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 (Table 2).

Table 2 - Infrastructure Projects Mitigated Through the Use of Mitigation Credits in FY21 by Participating Agency

City of Austin	
Starting City of Austin Balance	**11,473.54 acres**
New preserve additions (credits) – Bright Leaf Preserve	216.6
AW Rock Harbour Force Main Improvements	0.5
AW Four Points Center Lift Station Improvements	0.3
AW Boulder Lane Lift Station Improvements	0.3
AW Great Hills Lift Station Improvements	0.2
AW Bull Creek Waste Water System Renewal	13.4
AE Williamson Substation Improvements	0.1
Davenport Village Fire & EMS	1.6
AE Bee Creek Substation Fence Improvement	0.1
AE Primoris Pole Replacement at Park West	0.1
Remaining Mitigation Credits	**11,674.54 acres**

Travis County	
Starting Travis County Balance	**8,667.684 acres**
New preserve additions (credits)	0
TC Fitzhugh Rd widening	8.7
LTISD Vail Divide South Expansion	1.1
Remaining Mitigation Credits	**8,657.884 acres**
Lower Colorado River Authority (LCRA)	
Starting LCRA Balance	**260.03 acres**
New preserve additions (credits) –	0
Pedernales Electric Cooperative (PEC) FM 2769 Pole Changeouts	0.2
Geotechnical Investigations for the LCRA Marshall Ford to McNeil (T197) Storm Hardening Project	0.1
Remaining Mitigation Credits	**259.73 acres**

A number of private landowners also manage habitat within the 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 their reports are not incorporated into this Annual Report. The Permit Holders strive to 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 and 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 entities participating through the BCCP have met their obligations under the Act and may proceed with development under the terms of their respective Participation Agreements. Those agencies and landowners choosing not to participate may comply with the Endangered Species Act by obtaining an individual 10(a) permit from the USFWS.

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 agreement entitled "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. During FY21 a total of 23 Participation Certificates were issued, providing incidental take permits for two subdivisions, two infrastructure projects, thirteen single family residential lots,

two commercial developments, one school project, and three multi-family residential developments (Table 3).

Funds Collected through Participation Certificates

A total of $728,450.00 was collected through the sale of Participation Certificates in FY21 (Table 3). To facilitate a 50/50 split in participation certificate revenue between the City of Austin and Travis County, participants pay the mitigation fee with two checks, half to "BCCP-City of Austin" and the other half to "BCCP-Travis County." The checks are delivered to each agency for separate processing.

Table 3 - FY21 Projects Mitigated Through the Purchase of Participation Certificates

Application Number	Date	Name	Category	Amount Paid
0983	2/11/2021	Adrienne Choi and B. Yong	Multi-Family Residential	$36,750.00
0987	8/25/2021	Judy & Fred Helms; Kathy and Donald Gross	Multi-Family Residential	$50,425.00
1018	2/26/2021	James and Loretta Fellers	SF Residential	$2,000.00
1028	10/29/2020	Lake Travis Independent School District	School Use	$1,100.00
1030	10/29/2020	Redbird Investors, Ltd	SF Residential	$1,100.00
1038	1/28/2021	Brushy Creek Regional Utility Authority (BCRUA)	Infrastructure	$27,500.00
1039	12/17/2020	Carl and Emily Dieckmann	Commercial	$6,050.00
1041	12/17/2020	Mark Saliterman	SF Residential	$2,000.00
1043	1/28/2021	Joel and Karen Kennedy	SF Residential	$6,050.00
1044	12/17/2020	Angelyn and Ted Kruger	SF Residential	$5,500.00
1045	1/28/2021	Brushy Creek Regional Utility Authority (BCRUA)	Infrastructure	$11,575.00
1047	2/26/2021	Michael & Susan Dell Foundation	Commercial	$14,575.00
1049	2/26/2021	Richard Siegmund Jr	SF Residential	$28,250.00
1050	2/26/2021	Jeff Seiler	SF Residential	$5,775.00
1061	2/25/2021	Robert and Claudine Drummond	SF Residential	$2,000.00
1065	7/15/2021	Kasey J Werlin	SF Residential	$2,000.00
1068	6/25/2021	James Blake Jasman	SF Residential	$1,375.00
1071	6/25/2021	Chris and Jennifer Dillie,	SF Residential	$159,500.00
1078	9/30/2021	Wesley and Lisa Youngblood	SF Residential	$6,600.00
1079	8/4/2021	Granada Ridge, LLC.	Multi-Family Residential	$109,725.00
1086	9/30/2021	Guy Havenstein	SF Residential	$5,500.00
0721-Q	12/17/2020	Travisso, Ltd.	Subdivision	$51,150.00
0721-R	1/28/2021	Travisso, Ltd.	Subdivision	$191,950.00
			Total	$728,450.00

Funds Collected through Tax Benefit Financing

Travis County's Tax Benefit Financing Plan is 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). It is the method Travis County agreed to use for funding land acquisition and management. In FY21, Travis County's Tax Benefit Financing Plan (TBF) generated $21,193,399.00 for Travis County's land acquisition and management projects.

Funds Expended for Land Acquisition

The Permit Holders received $60,584,037 in federal grant funds from 1997 to 2010 through the USFWS Section 6 HCP Land Acquisition Assistance Program. With the required match, a total of $81,222,130 was spent on grant-funded BCP Preserve Acquisition, as indicated in Table 4.

Table 4 - USFWS HCP Land Acquisition Grants Received by the Permit Holders, 1997-2010

Year	Federal Grant Funds	Minimum Local Match *	Total Grant	Local Recipient
1997	$1,000,000	$333,333	$1,333,333	City of Austin
1998	$2,000,000	$666,667	$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	$14,362,500	$4,787,500	$19,150,000	City of Austin, Travis County
2002	$10,000,000	$3,333,333	$13,333,333	Travis County
2003	$4,993,794	$1,664,598	$6,658,392	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
2008	$5,250,000	$1,750,000	$7,000,000	Travis County
2010	$1,330,243	$886,829	$2,217,072	Travis County
Total	**$60,584,037**	**$20,563,927**	**$81,222,130**	

* Minimum match does not include overmatches

Travis County continues to pursue strategic land acquisition projects to complete permit requirements, improve preserve configuration, and offset habitat losses within the original preserve acquisition zone. Fee simple purchases are the most common approach to land protection, but conservation easement purchases, donations, and management agreements are also utilized to secure protection for habitat lands that may not otherwise be available.

Travis County did not close on any land acquisition projects in FY21. The $19,880147 TBF budget rolled over for use in FY22. At the end of FY21 Travis County managed 12,462.983 acres of land within the BCP. For a detailed account of all BCP tracts assembled see Appendices C, D, and E. All City of Austin and Travis County FY20 BCP land acquisitions are shown by tract in Table 5.

Table 5 - Travis County and City of Austin FY21 BCP Land Acquisitions.

Tract Name	Agency	Date Acquired	Acreage	Total Expenditures
	Travis County	NA	0	$0
		Total	**0**	**$0**
Bright Leaf Preserve	City of Austin	8/19/2021	216	$0
		Total	**216**	**$0**

Funds Expended for Operations and Maintenance

In FY21, the Permit Holders, LCRA, TNCTX, the Travis Audubon Society (TAS) and the City of Sunset Valley spent $6,283,206 on operation and maintenance of BCP lands (Table 6).

The City of Austin spent a total of $2,183,787 for FY21 to fund BCP management expenditures by the Austin Water Wildland Conservation Division - Balcones Canyonlands Preserve Program (WCD-BCP). This figure understates the City's total expenditures on this program since it does not include (1) work by other staff in Austin Water on program administration and support; (2) operation and maintenance expenditures by Austin Parks and Recreation Department (PARD) operations on BCP-designated parkland; or (3) capital improvement projects related to offices, fencing, and other facilities/ infrastructure. The aforementioned expenditures cannot be readily determined from their program budgets.

Table 6 - Annual FY19 through FY21 BCP Budgets (excluding land acquisition costs) for Permit Holders, the Managing Partners, and Cooperating Entities with Summary of Total Budgets since Plan Inception.

BCP Partner	FY 2019	FY 2020	FY 2021	Total Budget: 1996 to Present
City of Austin*	$2,184,283	$2,184,506	$2,183,787	Up through FY21 $27,031,928
Travis County	$6,096,477***	$2,760,549	$3,992,882	Up through FY21 $31,899,537
LCRA**	$4,564.00	$5,639	$5,537	Up through FY21 $1,828,064
TNCTX	$10,000	$10,000	$10,000	Up through FY21 $1,120,000
TAS	$85,000	$85,000	$85,000	Up through FY21 $561,986

City of Sunset Valley****	$0	$3,200	$6,000	Up through FY21 $28,061
TOTALS	**$8,380,324**	**$5,048,894**	**$6,283,206**	Up through FY21 $62,463,576

* City of Austin budget includes BCCP Participation funds.

** Does not include expenditures by Westcave Preserve Corporation

*** The larger than usual number for FY19 was a $3M infusion to fund road repairs

**** The City of Sunset Valley does not track staff time in regard to open space management. Budgetary expenditures only reflect the cost of consultants.

The Travis County Natural Resources budget for the BCP Program in FY21 was $3992,822. This total includes Travis County General Fund expenditures, BCP Participation funds, funds for land acquisition and funds negotiated and received from private 10(a) holders for land managed by Travis County to support ongoing operations and maintenance of County-managed Conservation Easements. This sum does not include administrative, legal, law enforcement support or non-habitat-related operations and maintenance provided by other Travis County Departments. This sum does not include estimated expenditures by St. Edwards University, which holds a contract to conduct educational programming and management of the County-owned Wild Basin Wilderness Preserve.

Lands Dedicated to the Balcones Canyonlands Preserve

As of FY21, 33,232 acres of black-capped vireo and golden-cheeked warbler habitat have been assembled by the Permit Holders with the assistance of cooperating landowners and entities. Even though the minimum 30,428 acres of endangered bird habitat has now been acquired, additional acreage will still be needed to meet the configuration requirements for the bird habitat blocks by macrosite and to acquire additional specific karst features required in the Permit.

Fifty-two of the 62 karst features which are identified to be protected in the permit have been afforded some level of protection. Eleven additional endangered species karst features which are not listed on the permit are also protected on BCP land. A map illustrating the current status of the BCP is enclosed as Appendix E. Summaries of BCP lands sorted by macrosite and managing entity are attached as Appendices C and D, respectively.

FY 2021 Research or Investigative Reports

Research reports for activities that occurred on the BCP are included as Appendices F through R, and T1 through T13. See the table of contents for a list of appendices which include the title of each research report.

Public Use, Habitat and Wildlife Monitoring, and Management Activities Occurring within the Balcones Canyonlands Preserve

CITY OF AUSTIN

The following section lists the wildlife and habitat monitoring, management, and public use activities on City of Austin (COA) land counted as part of the BCP. The COA's BCP tracts are managed by WCD-BCP and PARD with different management responsibilities assigned to each entity (Table 7). PARD operations performs regular maintenance such as mowing, trash pickup, management of public access, and some trail management activities, while WCD-BCP staff assumes primary responsibility for BCP management and monitoring.

Table 7 - Management Status of City of Austin BCP Properties

Tract	Primary Management Responsibility	Acreage
Upper Bull Creek Unit (Franklin, Gass, Lucas, Hanks, Lanier, COA Canyon Creek plus MUD tracts, Gardens at Bull Creek, Bowman, and Sam Hamilton Memorial Reserve (former WTP 4 "entire tract")	Austin Water (AW)	1166.50
Middle Bull Creek Unit (Kent Butler Ecological Reserve, Beard Trust)	AW	996.71
Lower Bull Creek Unit (Jester, Forest Ridge, 3M, Hilltop, Gibson/Nott, Hiller, Kruger)	AW	1120.98
Lime Creek (incl. 100 acres of Austin-Simon, Ltd.)	AW	586.70
Park West, Coldwater/Cowfork, Long Canyon, Vaught Ranch	AW	1393.86
Carol Lee	AW	34.14
Cortaña	AW	1751.95
Double J&T	AW	1730.00
Reicher Ranch	AW	819.74
Bohls Ranch	AW	450.14
Bohls II	AW	18.81
Sansom	AW	13.00
Senna Hills	AW	35.00
Schramm Ranch	AW	100.63
Vireo Preserve	AW	214.00
Ullrich Water Treatment Plant	AW	18.00
Barton Creek Ventures	AW	13.62
Massey	AW	5.00
Whirlpool Preserve	AW	4.70
Bright Leaf	AW	215.15
	AW Subtotal	**10,688.63**

Bull Creek District Park, Bull Creek Greenbelt	PARD/AW	129.48
St. Edward's Park	PARD/AW	50.00
Barrow Preserve	PARD/AW	8.00
Emma Long Metro Park	PARD/AW	950.00
Commons Ford Park	PARD/AW	115.00
Barton Creek Wilderness Area (Barton Creek Venture)	PARD/AW	1075.24
Barton Creek Greenbelt	PARD/AW	814.64
Friesenhahn	PARD/AW	62
Mt. Bonnell	PARD/AW	6
	PARD/AW Dual-Managed Subtotal	**3,210.36**
	TOTAL ACREAGE	**13,898.99**

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

Table 8 - City of Austin Monitoring and Management Activities on BCP Tracts within the Bull Creek Macrosite

	Monitoring and Management Activities on the Balcones Canyonlands Preserve (City of Austin tracts)	Bull Creek macrosite																				
		upper Bull Creek unit										middle unit			lower Bull Creek unit							
		Bowman	Canyon Creek	Canyon Creek MUD tracts 1 to 3	Franklin	Gardens at Bull Creek	Gass	Hanks	Lucas	Lanier	Sam Hamilton Memorial Reserve	Beard Trust	Kent Butler Ecological Resv	Jester Estates Cave Preserve	Barrow Preserve	Bull Cr. Greenblt.	Forest Ridge	Gibson/Nott	Hiller/Hilltop	Jester	Krueger	St. Edwards Park	3M
Monitoring Activities	mist-net, band, and spot-map golden-cheeked warblers										X		X				X						
	search for banded golden-cheeked warblers	X								X	X		X				X	X	X	X	X	X	X
	mist-net, band, and spot-map black-capped vireos												X				X						
	karst monitoring (faunal surveys, cricket counts, karst feature searches)			X							X		X	X			X						
	spring/stream monitoring (including Jollyville Plateau Salamanders)												X			X	X			X			
	bracted twistflower monitoring																						
	canyon mock-orange monitoring																						
	vegetation monitoring																						
	fuel moisture sampling of junipers												X										
	deer & hog trap photo monitoring		X		X			X		X	X	X	X							X		X	
	monitoring of oak wilt	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Management Activities	deer control		X		X					X	X										X		
	feral hog control		X		X			X		X	X	X	X								X		X
	red imported fire ant control													X									
	habitat restoration (native plants & karst)			X		X		X			X		X							X			
	non-native plant control	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X
	trash removal	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X
	patrol for evidence of trespass, vandalism, or dumping	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
	maintenance of roads, fences, signs	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X
	inspect utility corridor maintenance		X			X						X	X				X			X			X

Table 9 - City of Austin Monitoring and Management Activities on BCP Tracts within the Barton Creek, Cypress Creek, North Lake Austin, South Lake Austin, and West Austin Macrosites

	Barton Creek macrosite					Cypress Creek		North Lake Austin macrosite							South Lake macrosite					West Austin macrosite			
Monitoring and Management Activities on the Balcones Canyonlands Preserve (City of Austin tracts)	**Barton Creek Wilderness**	**Barton Creek Greenbelt**	**Bohls II**	**Friesenhahn**	**Senna Hills**	**Austin-Simon**	**Lime Creek**	**Carol Lee**	**Coldwater**	**Cortaña**	**Cowfork/Vaught**	**Emma Long**	**Long Canyon**	**Parke West**	**Bohls**	**Commons Ford**	**JJ&T/Sansom**	**Reicher Ranch**	**Schramm Ranch**	**Bright Leaf**	**Mount Bonnell**	**Ullrich**	**Vireo Preserve**
mist-net, band, and spot-map golden-cheeked warblers	X	X								X		X					X	X					X
search for banded golden-cheeked warblers	X	X				X	X	X		X		X	X	X			X	X					X
mist-net, band, and spot-map black-capped vireos										X					X								X
karst monitoring (faunal surveys, cricket counts, karst feature searches)	X	X					X			X				X									
spring/stream monitoring (including Jollyville Plateau Salamanders)										X	X				X		X	X				X	X
bracted twistflower monitoring	X	X																		X	X	X	
canyon mock-orange monitoring																							
vegetation monitoring									X	X						X	X	X					X
fuel moisture sampling of junipers										X								X					
deer & feral hog trap photo monitoring															X		X	X					
monitoring of oak wilt	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
deer control															X		X						
feral hog control																	X						
red imported fire ant control							X							X									
habitat restoration (native plants, karst)										X			X	X			X	X					X
non-native plant control							X	X	X	X	X	X	X	X	X		X	X			X	X	X
trash removal			X		X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X
patrol for evidence of trespass, vandalism, or dumping			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
maintenance of roads, fences, signs			X							X		X		X	X		X	X			X		X
inspect utility corridor maintenance														X			X			X		X	X

Table 10 - City of Austin Monitoring and Management Activities on Karst Preserves

Monitoring and Management Activities on the Balcones Canyonlands Preserve (City of Austin tracts)	Karst Preserves											
	Village at Western Oaks Karst Preserve	William H Russell Karst Preserve	Goat Cave Karst Preserve	Dick Nichols Park	Testudo Tube Cave Karst Preserve	Circle C Metro Park	Tabor tract (WQPL)	Stillhouse Hollow Preserve	Schroeter Park	Shoal Creek Greenbelt	Massey Tract	Whirlpool Preserve
mist-net, band, and spot-map golden-cheeked warblers												
search for banded golden-cheeked warblers												
mist-net, band, and spot-map black-capped vireos												
karst monitoring (faunal surveys, cricket counts, karst feature searches)	X	X	X	X	X	X	X	X				X
spring/stream monitoring (including Jollyville Plateau Salamanders)					X							
bracted twistflower monitoring												
canyon mock-orange monitoring												
vegetation monitoring	X											
fuel moisture sampling of junipers												
deer & hog trap photo monitoring												
monitoring of oak wilt		X	X									
deer control												
feral hog control												
red imported fire ant control	X				X	X	X					
habitat restoration (native plants & karst)	X					X						X
non-native plant control	X		X	X	X	X		X	X			X
trash removal	X	X	X	X		X		X	X	X		X
patrol for evidence of trespass, vandalism, or dumping	X	X	X	X	X	X	X	X	X	X	X	X
maintenance of roads, fences, signs	X	X	X		X	X		X				X
inspect utility corridor maintenance		X										

In addition to the activities in the tables above, BCP staff conducted or coordinated the following activities within each macrosite. Land management activities are also summarized in the BCP Quarterly Staff Reports found in Appendix S1. Activities specific to golden-cheeked warbler, black capped vireo, and karst invertebrates are covered in separate species reports.

BARTON CREEK MACROSITE

Barton Creek Wilderness Area and Greenbelt, and the Friesenhahn tract

- Found 51 Bracted twistflower (*Streptanthus bracteatus*) plants during 2 surveys, May 3 and 12.
- Found 4 Bracted twistflower plants at Gus Fruh on May 12th survey.
- Reported continued encroachments and dumping by neighbors to Parks and Recreation Dept. (PARD) Rangers for action.
- Requested from PARD maintenance staff installation of a removable bollard blocking EMS evacuation route from Sculpture Falls and blocking bypass of existing bollards.
- Staff and a volunteer documented new unauthorized trails within endangered species habitat, and reported to PARD Rangers, who closed down two of the new trails.

Senna Hills

- Directed contractors implementing a shaded fuel break to reduce the risk of wildfire along the frontage of RM 2244.

BULL CREEK MACROSITE

Upper Bull Creek Unit

Canyon Creek MUD (Stovepipe cave karst preserve)

- As part of a hydrological study, staff and contractors continued to excavate several promising features and had a major breakthrough, a feature named Persephone Caverns is now over 600 feet in length and has several species of concern as well as listed species.

Sam Hamilton Memorial Reserve West

- BCP staff worked with Austin Fire Department staff to determine how to mitigate for illegal clearing that occurred on the adjacent Austin Fire Station.
- As part of a hydrological study, staff and contractors opened up a new cave close to Garden Hoe sink, this new feature named “Lost Ham Cave” is substantially larger than the other existing caves on the property so therefore, likely to have listed species.

Middle Bull Creek Unit

Kent Butler

Jester Estates Karst Preserve

- While bait trapping recent excavated bore hole for an upcoming upgrade of LCRA's T-197 transmission line, LCRA contractor discovered the endangered tooth cave ground beetle (bait trap).
- In August and September, expanded live fuel moisture monitoring to include a forest interior and forest edge site.

Lower Bull Creek Unit

Forest Ridge/ Jester

Jester Estates Karst Preserve

- AFD performed a shaded fuel break

Bull Creek Greenbelt

- Coordinated and co-lead Bracted twistflower survey with PARD rangers and USFWS and UT botanists.

CYPRESS CREEK MACROSITE

Lime Creek/Austin Simon

- Collected Juniper slabs from trees that fell on fence during Winter Storm Uri to be used in tree ring analysis.

NORTH LAKE AUSTIN MACROSITE

Parke West/Coldwater/Cowfork/Long Canyon/Vaught Ranch

- Continued volunteer effort to remove invasive Chinese privet infestation. Also coordinated workday with group from Austin's Civilian Conservation Corps.
- Mapped trail network that comes onto Long Canyon and Parke West from neighboring areas.

Cortaña

- Directed placement and oversaw construction of an oak wilt trench straddling the boundary with a Steiner Ranch BCP tract.
- Trespass continues to be a problem on this tract, as evidenced by the vandalism of a boundary gate post -- which staff quickly replaced – and new graffiti within an old ranch structure. One trespasser evicted.
- Shin oak acorn crop in the shinnery was better than in 2020, but still provided fewer than 320 for planting in the mid-Cortaña Black-capped Vireo habitat creation area.

- Conducted final counts and recorded heights of *Quercus buckleyi*, *Q. fusiformis*, and *Q. sinuata* seedlings (acorns planted October 2018) and collected soil samples for routine analyses, texture and organic matter from study plots.
- In August and September, expanded live fuel moisture monitoring to include a forest interior site near the existing open site.

Emma Long Park and Preserve

- AW BCP and PARD staff continued periodic meetings to discuss conservation issues at Emma Long.
- Installed an extension to an existing oak wilt suppression trench to a depth of 60", and worked with Parks staff to use felled vegetation material to cover trench to deter trail creation.

Carol Lee Preserve

- Completed fencing of tract boundary along FM 2222.
- Staff and volunteers completed Golden-cheeked warbler enumerations on newly acquired Carol Lee preserve

SOUTH LAKE AUSTIN MACROSITE

BCP staff participated in the Westcave Christmas Bird Count, where the count circle includes this macrosite (Bohls Ranch, Reicher Ranch, and JJ&T).

JJ&T

- Conducted final counts and recorded heights of *Quercus buckleyi*, *Q. fusiformis*, and *Q. sinuata* seedlings (acorns planted October 2018 and 2019) and collected soil samples for routine analyses, texture and organic matter from study plots.
- Shaded fuel break completed along urban interface with Apache Shores and Cardinal Hills neighborhoods.
- Installed a 0.41-acre fence for a native plant arboretum.
- Planted approx. 400 native trees and shrubs on the 0.5 mile-bioswale project, as well as native grasses and wildflowers.
- Planted approx. 60,000 evergreen sumac, 22,000 yaupon, 16,000 Ashe juniper, 14,000 flameleaf sumac, 2,000 silk tassel, 600 shin oak acorns, and 150 Mexican buckeye seeds under canopy edge across approx. 55 acres off Murfin Road, as well as native grasses and forbs collected on other areas of the BCP.
- Planted native woody seeds and forbs collected on other parts of the BCP along the floodplain (approx. 1.5 acres) and in the oak wilt (approx. 2 acres) center.
- Worked with TreeFolks, Development Services, PARD, and City/County BCP to collect "hyperlocal" native woody plant seeds. Seeds were shipped to a vendor to prepare (stratify and/or

scarify) seeds for planting, grow out a subset to determine viability and for future planting, and return the remainder to be sown directly in the field.
- Austin's Civilian Conservation Corps assisted with tree planting on habitat restoration sites on the JJ&T tract.

Reicher Ranch
- Continued restoration of Golden-cheeked Warbler habitat on the grounds of the office headquarters and surrounding areas.
- Continued planting a pollinator garden demonstration area in front of the Caretaker's House.
- Obtained final decomposition measurements of *Ligustrum lucidum* logs inoculated with Turkey Tail mushrooms (February 2019). Repeated at two other sites (Vireo Preserve, Lost Creek).
- Conducted final counts and recorded heights of *Quercus buckleyi*, *Q. fusiformis*, and *Q. sinuata* seedlings (acorns planted October-November 2019) and collected soil samples for routine analyses, texture and organic matter from study plots on Mount Tabor and Birthday Mountain.
- Conducted final counts and recorded heights of *Quercus buckleyi*, *Q. fusiformis*, and *Q. sinuata* seedlings (acorns planted November 2019) and collected soil samples for routine analyses, texture and organic matter from study plots near trail below Emmaus.
- Texas State University student continued to monitor *Quercus buckleyi* seedlings (acorns planted November 2020) in plots below Emmaus and Reicher circle.
- In August and September, expanded live fuel moisture monitoring to include a forest interior site near the existing open site.

WEST AUSTIN MACROSITE

Bright Leaf Preserve
- Acquisition of Bright Leaf Preserve was finalized August 19, 2021. Bright Leaf Preserve is fairly unique among BCP preserves in that it is operation directed by a Will and court judgment, its operation is supported by a dedicated endowment, and it has a director/resident, all of which support operations according to BCP land-management requirements.
- Bracted twistflowers (*Streptanthus bracteatus*) were observed here in 2002, although this plant was not observed during surveys on May 19 and May 27.
- Evaluated powerlines with the preserve director and Austin Energy contractors in May.

Mount Bonnell
- Found 39 Bracted twistflower (*Streptanthus bracteatus*) plants during a half-day census on May 5.

Ullrich WTP

- Found 40 Bracted twistflower (*Streptanthus bracteatus*) plants during a half-day census on April 28.
- Found at least 18 Bracted twistflower seedlings on site visit on November 23.

Vireo Preserve

- Beau Brotherton produced a "one year later" video of the bioswale project (bit.ly/bcpBioswale).
- Due to Covid-19, a limited number of staff and volunteers maintained restoration projects to promote water retention, slope stabilization, soil restoration, and reforestation on degraded sites to promote future GCWA and BCVI habitat.
- CAMN 2021 hosted a botany class in April.
- Directed the CAMN 2021 class on construction of a rainwater system in the canyon (the 9th rainwater system on the Vireo Preserve).
- Oversee CAMN's game camera project.
- Collected and grew out over 300 native grass, forb, and woody plants in the nursery. Planted approx. 75 trees.
- Worked with TreeFolks, Development Services, PARD, and City/County BCP to collect "hyperlocal" native woody plant seeds. Seeds were shipped to a vendor to prepare (stratify and/or scarify) seeds for planting, grow out a subset to determine viability and for future planting, and return the remainder to be sown directly in the field.
- Obtained final decomposition measurements of *Ligustrum lucidum* logs inoculated with Turkey Tail mushrooms (February 2019) in February and August. Repeated at two other sites (Reicher, Lost Creek).
- Conducted final counts of *Quercus buckleyi* seedling plots (planted fall 2018).
- Continued with the volunteer-led water quality monitoring.
- In fall 2021, began working with volunteers to restore an area previously impacted the oak wilt fungus.
- Overseeing an Eagle Scout project to build benches to create a "learning circle".

FY 2021 BCP Partners Outreach

Each quarter, BCP partners with outreach programs meet to coordinate efforts and produce a summary report for the BCCP Coordinating Committee. These reports are found in Appendix S4 and include the number of hours worked by volunteers that quarter, the number of people reached through educational programs, and outreach highlights from each BCP partner. An annual summary is included in the final report of the year and can be seen below as Table 11. The summary includes BCP outreach data from Travis County, City of Austin, Travis Audubon (Baker Sanctuary), The Nature Conservancy (Barton

Creek Habitat Preserve), Westcave Preserve, and St. Edward's University (Wild Basin Wilderness Preserve).

Table 11 - Summary of FY21 BCP Outreach and Education Activities

Activity	Location	Events	Youth	Adults	Volunteer Hours
Guided Hikes	Onsite	1,032	2,062	8,270	153.25
Programs / Presentations	Onsite	23	900	96	21
	Offsite	47	759	1,413	16.5
Land Stewardship	Onsite	452	139	1096	4,439.25
Ecological Monitoring	Onsite	266	6	239	1,102.25
Visiting Groups / Educators	Onsite	10	8	140	
Training	Onsite	7	0	372	
Administration	Onsite	10		2	40.75
FY 2021 Total		**1,847**	**3,874**	**11,628**	**5,773**

* Monetary value of volunteer work ($26.43/hour): $152,580.39.

TRAVIS COUNTY

Travis County Natural Resources staff conducted a variety of resource monitoring and management activities on County-managed BCP lands in FY21, which are summarized in the BCP Quarterly Staff Reports found in Appendix S2 and in Tables 12, 13, and 14. The wildlife and plant management activities are described in more detail in Appendices M and N. Additionally, the annual reports for Wild Basin Wilderness Preserve and the Baker Sanctuary can be found in Appendices O and Q, respectively. Wild Basin is owned jointly by Travis County (164 acres) and St. Edwards University (63 acres) and is managed by St. Edwards University under contract with Travis County. Travis Audubon Society owns and manages the 715-acre Baker Sanctuary as part of the BCP, with Travis County holding a conservation easement over 675 acres of the sanctuary.

Table 12 - FY21 monitoring and management activities on Travis County-managed BCP tracts within the Bull Creek and North Lake Austin Macrosites.

Monitoring and management activities on Travis County-managed BCP tracts		Bull Creek Macrosite								North Lake Austin Macrosite						
		Canyon Vista	Colina Vista	Concordia	Karnik/ Richards/	Origer	Ribelin	Sam Hamilton	Woody Hollow	Franzetti/ Webb	Gray Mountain/ Coldwater	Greenshores	Hereford/	Hunt, Brown, Martin, and Ross Conservation	Steiner Ranch	Woods of Greenshores
Monitoring Activities	intensive plot survey for golden-cheeked warblers	X*	X													
	enumeration survey for golden-cheeked warblers									X		X			X	X
	presence/absence survey for golden-cheeked warblers							X*								
	enumeration survey for black-capped vireos						X									
	presence/absence survey for black-capped vireos			X			X								X	
	karst surface monitoring															
	karst faunal survey															
	cave cricket exit count															
	Jollyville plateau salamander survey			X			X	X								
	water quality						X	X								
	deer survey															
Management Activities	deer control									X						
	feral hog control	X		X	X		X	X		X						
	cowbird control															
	red imported fire ant control															
	non-native plant control	X		X			X			X					X	X
	habitat restoration															X
	trash removal															
	patrol for evidence of trespass, vandalism, and dumping	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	fence maintenance or construction									X		X			X	X
	wildfire fuel mitigation	X														X

* Re-sighting of banded warblers only

Table 13 - FY21 Monitoring and Management Activities on Tracts Managed by Travis County within the Cypress Creek Macrosite.

	Monitoring and management activities on Travis County-managed BCP tracts	Bunten	Collins/ Franklin	Cuevas East	Cuevas/ TSNL/ [illegible]	Crossings	Grandview Hills North	Grandview Hills South	King/ Atwood/ Blake	Lake Perspectives	Lime Creek Unit	Lucas/ [illegible]	New Life	Nootsie	Romberg	SAS	Snowden	Spezia	Toops	Trails End/ Seven 05	Wheless	Vireo Ridge/ Stratton	Vista Point	Volente Unit
Monitoring Activities	intensive plot survey for golden-cheeked warblers	X	X														X				X		X	
	enumeration survey for golden-cheeked warblers										X				X					X				
	presence/absence survey for golden-cheeked warblers	X*	X								X	X*				X*	X*				X*	X*	X*	
	enumeration survey for black-capped vireos											X										X	X	
	presence/absence survey for black-capped vireos							X				X										X	X	X
	karst surface monitoring			X	X		X					X											X	
	karst faunal surveys			X	X		X				X	X											X	
	cave cricket exit counts			X	X							X												
	Jollyville Plateau salamander survey																							
	water quality												X								X		X	
	deer survey	X					X							X			X					X		X
Management Activities	deer control																X					X		X
	feral hog control																			X				
	cowbird control													X										
	red imported fire ant control			X	X							X											X	
	non-native plant control	X	X	X	X	X	X	X			X	X	X	X		X	X				X	X	X	
	habitat restoration	X			X							X					X					X		
	trash removal										X	X		X						X	X			
	patrol for evidence of trespass, vandalism, and dumping	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	fence maintenance or construction										X	X				X								
	wildfire fuel mitigation							X		X					X	X					X		X	

* Re-sighting of banded warblers only

Table 14 - FY21 monitoring and management activities on Travis County-managed BCP tracts within the South Lake Austin, Pedernales River, West Austin, Big Sandy Creek Macrosites and Cave Tracts.

Monitoring and management activities on Travis County-managed BCP tracts		South Lake Austin		Pedernales River	West Austin	Lake Travis	Cave Tracts		
		Chandler	Medway	Hamilton Pool/ Martin	Wild Basin	Kotrla Unit	Irelands Cave	McNeil	Starks North Mine/ Twidwell
Monitoring Activities	intensive plot survey for golden-cheeked warblers				X				
	enumeration survey for golden-cheeked warblers			X					
	enumeration survey for black-capped vireos					X			
	presence/absence survey for black-capped vireos					X			
	karst surface monitoring					X	X	X	X
	karst faunal survey					X	X	X	X
	cave cricket exit count					X		X	X
	Jollyville plateau salamander survey								
	water quality			X	X				
	deer survey			X		X			
Management Activities	deer control		X	X		X			
	feral hog control		X	X		X			
	cowbird control			X		X			
	red imported fire ant control					X			
	non-native plant control	X			X	X			X
	habitat restoration								
	trash removal			X	X				X
	patrol for evidence of trespass, vandalism, and dumping	X	X	X	X	X	X	X	X
	fence maintenance or construction				X				X
	wildfire fuel mitigation								

LOWER COLORADO RIVER AUTHORITY

Annual Status Report for the Balcones Canyonlands Conservation Plan
October 1st, 2020 - September 30th, 2021.

Mitigation Credits Used

The Lower Colorado River Authority (LCRA) debited 0.3 acres from its mitigation bank balance between October 2020 and September 2021 for Pedernales Electric Cooperative (PEC) FM 2769 Pole Changeouts, and Geotechnical Investigations for the LCRA Marshall Ford to McNeil (T197) Storm Hardening Project. LCRA has 259.73 mitigation credits remaining.

Management Highlights

LCRA managed approximately 400 acres as a portion of the preserve system on the McGregor tract and Westcave Preserve. Management activities for these LCRA preserves continued to focus on natural resource research and management, access management, and stewardship promotion. Land management activities are also summarized in the BCP Quarterly Staff Reports found in Appendix S3.

McGregor

- In the fall of 2020, Plateau Land and Wildlife Management conducted a white-tailed deer survey of the preserve that revealed the density of white-tailed deer to be approximately 9.94 acres/deer, with a maintenance harvest of 5 to 6 deer per year recommended. Based on these findings, LCRA concentrated its harvesting efforts for the winter of 2020/2021 on other LCRA properties with higher densities and easier access. In September 2021, Plateau Land and Wildlife Management conducted another white-tailed deer survey to see if harvesting is needed in the winter of 2021/2022. This survey revealed the density of white-tailed deer to be approximately 22.38 acres/deer, at 16 total individuals. The average density determined over the last five years of data analysis is approximately 11 acres/deer. The September 2021 estimate is half the population of the previous five-year average, and despite the potential decline in the population, particularly the buck numbers, a maintenance harvest of two to three deer is

recommended. However, LCRA will concentrate harvest efforts on properties with higher densities, and easier access.

- LCRA's McGregor Good Neighbor Program permits expired on May 12, 2021. These permits allow trained residents of the neighboring Comanche Trail Community Association (CTCA) to hike the preserve on designated trails. In April 2021, LCRA updated the language of the required permits and reached out to the CTCA about training. LCRA is continuing to work with CTCA to find a time for this training and to issue new and renew existing permits.

Westcave

- Ongoing prairie restoration included a newly established 100-meter native seed plot as well as management for two other previously established 100-meter native seed plots. The plots are intended for intensive seed reservoirs for reestablishment of native grasses and forbs. Updates for prairie photo points occurred during July 2021. General maintenance is ongoing and includes trail inspections, trail work, tree trimming, boundary inspections, boundary maintenance, bird blind maintenance, and supplemental watering for butterfly gardens and planted trees.
- Fall 2020 and Spring 2021 programming included a Sketch in Nature session, multiple bird hikes, a birdability hike geared toward people with disabilities, native plant hikes, family hikes, wildflower walks, warbler walks, Origin Stories - Westcave in Eight Plants, Halloween full moon hikes, and a World Migratory Bird Day Hike, for a total of 83 attendees for all programs.
- FeederWatch (Cornell Lab of Ornithology Citizen Scientist program), which started in November 2020, ended in April 2021. This included weekly monitoring by volunteers and staff of birds at Leif's Bird Blind.
- Volunteer workdays were held throughout 2021, starting in Marchand including regular volunteers and students from Concordia University, Texas. Students worked on removing non-native plants and weeded gardens by the Environmental Learning Center and throughout the ADA friendly trail on the Uplands. Other volunteer workdays consisted of planting, weed eating, and watering in various areas.
- In late April 2021, Westcave held Heinz Branch Watershed Happy Hour of landowners within the shared watershed. Westcave board members and staff attended the event. The watershed spans potions of Hays, Travis, and Blanco counties.

- Westcave completed Phase Two of its Texas Parks and Wildlife Department recreational trails grant, which helped fund the construction of a decomposed granite (ADA-friendly) trail in early spring 2021, before the golden-cheeked warbler breeding season. Phase Two included completion of the segment from the Leif's bird blind to the historic home site. The ADA-friendly trail now extends from the public parking lot to the historic home site.
- Preserve maintenance is on-going and includes trail inspections, trail work, view shed clearing, invasive plant removal, nest box maintenance, tree trimming, bird blind maintenance and supplemental watering for butterfly gardens and newly planted trees.
- Research programs throughout the year consisted of:
    - Pond Watch (Xerxes Society Citizen Scientist program), which consists of bi-weekly dragonfly surveys conducted by a core group of volunteers. During the bi-weekly surveys, black saddlebags (target migratory species) and common green darner (target migratory species) were the only two species observed out of the five target species.
    - Monthly water quality sampling and testing, conducted at the grotto and at Hammett's crossing, the results of which were all within range and submitted to LCRA Colorado River Watch Network (CRWN).
    - Swift Night Out-surveys were conducted in September 2021, where up to 15 swifts were documented at a time.
    - Grotto water flow and Heinz Branch flow monitoring was conducted by staff throughout the fall of 2020 and summer 2021. Measured flows were within normal ranges.
    - Golden-cheeked warbler surveys began in March 2021 and continued until the end of breeding season in early June 2021. Four territories were detected and two of the four were confirmed as successful for breeding and nesting. The successful banding of one individual occurred during the golden-cheeked warbler breeding season. An un-banded male golden-cheeked warbler was found to be deceased on April 4, 2021, on the south side of the Environmental Learning Center. The male was donated to Texas A&M University for research purposes.
    - Nestwatch (Cornell Lab of Ornithology) began in March 2021. Seven nest boxes were monitored along with a purple martin house. All

seven nest boxes had at least one nesting attempt with one having three attempts. No eastern bluebirds were seen making a nesting attempt. The Purple Martin house had no purple martin occupants but there were two successful nests by an eastern phoebe.

- Weekly FrogWatch (Association of Zoo's & Aquarium's: FrogWatch USA) surveys throughout the Grotto began in early March 2021 and ended in early June 2021 with the efforts of two staff members, four volunteers, and one intern. Common species such as cliff chirping frog, Blanchard cricket frog, and Rio Grande leopard frog were recorded.
- Cave/spring research conducted by Peter Sprouse, Jessica Gordon, and Crystal Datri in 2020 was updated in the summer of 2021 on one invertebrate species, *Stygobromus russelli,* a species of concern found in Crystal Cave.
- A second follow-up cave faunal survey in Hammett's Cave was conducted in 2021 to confirm presence of an endangered species found inside during the initial cave faunal survey conducted in 2019. 12 individuals of *Texella reddelli* were confirmed inside of the cave, an increase over the 2019 survey. Most species were found under the rocks used as a barrier during public tours. A temporary rope boundary was placed by staff to further protect any species, including *Texella reddelli,* from being harmed by guests. Placement of a permanent barrier is planned for 2022 if funding is available.
- Bat research has been on-going during 2021 that includes weekly checks on all five current bat houses. One bat house has been consistently occupied with a group of up to ten individuals.

Expenditures

LCRA expenditures (10/1/2020 to 9/30/2021): $5,537.00*

*Does not include expenditures by Westcave Preserve Corporation

CITY OF SUNSET VALLEY

The City of Sunset Valley entered a BCCP Managing Partner Agreement on 7 February 2014 and designated 21.585 acres, known as the Gaines Greenbelt, as BCP. A report of the monitoring and management activities conducted on the Gaines Greenbelt for FY21 is included as Appendix P.

THE NATURE CONSERVANCY OF TEXAS ANNUAL REPORT FOR BARTON CREEK HABITAT PRESERVE

Science / Stewardship

Annual surveys (point count) were completed for the golden-cheeked warblers (GCWA) and black-capped vireos (BCVI) to determine population densities. The GCWA population remains stable, one BCHI was observed on the property during the 2021 season. Brown-headed cowbirds were removed from the property by shooting.

Preserve staff and TPWD public lands lottery hunters are helping to control the population of white-tailed deer in an effort to reduce browse and increase recruitment of Texas Oaks. Population is estimated through spot-light surveys, stand counts and camera surveys. Sixteen deer were harvested by 37 hunters.

Ongoing research projects included "KR Bluestem Effects on Grasslands" (The Nature Conservancy / Global Impact Invader Network – GIIN); "Golden-cheeked Warbler Population Viability and Habitat Suitability within the Balcones Canyonlands Preserve" (City of Austin and Balcones Canyonlands Preserve); and Community Structure and Composition of Lizards in Texas (University of TX at Arlington).

Due to Covid-19, timing issues, and burn bans, no prescribed fires were conducted during the reporting period.

Education/Outreach/Volunteers

The preserve hosted approximately 245 visitors, 140 volunteers totaling 442 hours of work, and 58 used the property for educational purposes. Groups included the Boy Scouts of America Troops 52, Texas Parks and Wildlife, Capital Area Master Naturalists, Balcones Master Naturalists, Audubon Society, and St. Edwards University. Due to Covid-19 numbers of visitors remained low due to minimal access and group size limitations.

Volunteer projects included removing old fencing, invasive species removal (Johnson grass – *Sorhum halepense*, Malta star-thistle – *Centaurea melitensis*, Chinaberry Tree – *Melia azedarach*, and *Ligustrum sp.*), trash pickup, trail

maintenance, fire-line preparation, juniper removal, deer surveys, bird surveys, boundary monitoring, and infrastructure repair.

Expense Summary

Operations and maintenance cost spent on BCP for FY 2021 was $10,000.

TRAVIS AUDUBON SOCIETY

Travis Audubon Society owns and manages 715 acres at the Baker Sanctuary which are included as part of the BCP. In April 2015, Travis County purchased a conservation easement for Baker Sanctuary to ensure that the function and purpose of the Sanctuary will be secured in perpetuity. A report of the monitoring and management activities conducted on the Bakers Sanctuary for FY21 is included as Appendix Q.

LITERATURE CITED

City of Austin and Travis County. 1995. *Interlocal Cooperation Agreement between Travis County and the City of Austin Implementing the Balcones Canyonlands Conservation Plan-Shared Vision.*

U. S. Fish and Wildlife Service. 1996a. *Federal Fish and Wildlife Permit No. PRT-788841.*

U. S. Fish and Wildlife Service. 1996b. *Final Environmental Impact Statement / Habitat Conservation Plan for Proposed Issuance of a Permit to Allow Incidental Take of the Golden-cheeked Warbler, Black-capped Vireo, and six karst invertebrates in Travis County, Texas.*