

## **Status Update of Selected BCP Permit Caves and Cave Issues**

By Nico Hauwert, Ph.D. BCP Program Manager, AWU, July 31, 2017

Caves are a core part of the BCP permit, and BCP staff are focusing on efforts to maintain permit caves, to conduct research on cave ecosystems, to restore caves for karst habitat, and promote public education on non-permit caves.

### **Get Down Cave in Village of Western Oaks**

Since 1998, Mark Sanders (BCP biologist) and Nico Hauwert worked to design Village of Western Oaks Karst Preserve under city acquisition, manage Get Down Cave according to BCP Land Management Plan, and utilize the non-permit caves to support cave education needs of the BCP. The preserve was intended as an experiment to examine whether viable cave ecosystem was possible with close public interaction through a publicly-accessible karst preserve, and initially the outlook was favorable as the residents embraced the karst preserve by announcing it as an amenity on their website, bringing over 1,000 people attended the annual cave day festivals. On Feb. 4, 2003 Lumbermans Investment Corporation deeded the preserve to the City of Austin, which filed an affidavit of non-acceptance on February 24, 2003, citing that the developer needed to repair a leaking wetpond first. The expense of repairing a leaking wetpond caused many potential owners, including the Barton Springs/Edwards Aquifer Conservation District, to avoid acquisition of the site, until Watershed Protection Department acquired funding for a Capital Improvement Project to repair the pond after City acquisition. On March 13, 2009, the BCP (Willy Conrad and Scott Rowin) was offered the karst preserve for management, but believed that Get Down Cave may be non-viable, and that the educational value of the preserve was small compared to the potential problems of working with adjacent homeowners, such that BCP did not want to acquire it at that time. However only four faunal surveys occurred between 1989 and 2012 in Get Down Cave on which any management decisions could be based on. Get Down Cave is habitat for rare troglobitic species such as; *Texella mulaiki*., *Speodesmus sp.*, *Cicurina bandida*, and *Rhadine austinica*, although Elliott (1997) suggested that additional species may be found with further study. The preserve was finally acquired by Watershed Protection Department in June 2016.

City Wildland Conservation staff are currently working with Watershed Protection staff to determine how we can meet the BCP karst land management goals for Get Down Cave.

### **Flint Ridge Cave: Hydrogeological Study**

Summary results of the Flint Ridge Hydrogeological Study were presented in the BCP Annual report to USFW (January 2017) and the City of Austin State of the Environment Report (April 2017) that maps surface areas that contribute water to Flint Ridge Cave. Completion of the Flint Ridge Cave Hydrogeological Study by Nico Hauwert is still required, awaiting awarding a contract with Zara Environmental LLC to complete portions of the report, the completion of a Quality Assurance study to address concerns by Watershed Protection Dept. on how cave water-quality samples were collected, and additional work necessary to complete the report. Meanwhile

clearing of vegetation and highway construction across SH45SW right of way began since January 2017 and monitoring continues to examine possible changes. Drip gauges operating at nine sites in Flint Ridge and Tabor Crevice caves monitor for changes in drip rate. Drip rate data was downloaded in April 2017 and found 3 out of 6 drip gauges inoperable in Flint Ridge that were replaced. From July 10 to 14, 2017 water quality samples were collected from 6 drips in Flint Ridge Cave as a cooperative sampling effort between BCP and Watershed Protection Dept. The previous water quality samples were collected Sept. 28, 2016 at the end of the hydrogeological study sampling. BCP will attempt to create a lab contract to allow regular sampling of cave drips and springs but expended the allowable amount until October 2017 without an MOU or contract. BCP is also in the process of remapping Flint Ridge Cave.

### **Blowing Sink Cave: Restoring Access to the Water Table**

Blowing Sink Research Management Unit was acquired by City of Austin (Parks and Recreation Dept.) in 2000 and contains one of the largest and deepest BCP permit caves, Blowing Sink Cave. This site is co-managed by the BCP. Blowing Sink Cave reaches the depth of the water table (240 feet below surface) where Barton Springs salamanders were discovered. Other large sinkholes on the site, including Brownlee, Winter Woods, Sinky Dinky, and Wyoka have not been maintained since acquisition and were observed to collapse and or plug, causing runoff to be diverted to Blowing Sink Cave. Under emergency provisions, the Austin City Council approved a contract to Zara Environmental LLC in June 2013, but the contract was not awarded until November 2013. This Capital Improvement project was conducted by Watershed Protection under project manager Nico Hauwert and concluded in 2016. Prior to the commencement of the contract work, in October 2013 a major flood pummeled Blowing Sink Cave with floodwater, rocks, and sediment such that the passage to the lower half of the cave cannot be re-accessed conventionally. BCP is contracting a 20 feet deep water and air-tight shaft to directly access the Main Pit in Blowing Sink Cave, so that the obstruction can be removed (See attached cross section).

### **Slaughter Creek/Another Cave Restoration**

Several of the BCP permit caves including Slaughter Creek Cave, and Pipeline Cave, lie within 500 feet of Mopac South Expressway, where an underpass is proposed to be constructed near the lower known extent of the caves. Slaughter Creek and nearby Another Cave were both filled in during the initial construction of Mopac South by the construction company and have never had the fill completely removed to examine the extent of the caves in relation to the nearby highway. PARD owns the Slaughter Creek Greenbelt and the caves are co-managed by BCP. City BCP staff are working with PARD staff to develop a solution to utilize cave trained volunteers to continue excavating the caves before the highway underpass is built. BCP also has many contractor cave-related work on co-managed PARD property that we don't have resources to continuously supervise. We are aware of many filled caves on PARD/BCP co-managed property that could potentially be restored to increase known karst habitat and provide education resources.

## **Goat Cave Karst Preserve**

The realignment of Davis Lane in 2014/2015 eliminated historical public access to the karst preserve. Research by Erin Woods and Nico Hauwert of Watershed Protection Dept. for new buffers areas for Goat Cave karst preserve and potential future parking revealed that a 5.8 acre strip, east of Goat Cave karst preserve, was to be deeded to Parks and Recreation in 2000, but was apparently forgotten. In 2016 this property was acquired by City of Austin Parks and Recreation, expanding the Goat Cave karst preserve by a 100 feet wide strip. Efforts to secure future parking access is still ongoing. The Save Barton Creek Association (SCBA) funded a new sign for the preserve. On April 9, 2017, an open house was held where staff from BCP, PARD, and SCBA unveiled the new sign and provided cave tours for the public. Beginning in August 2017, BCP is contracting construction of steps into Wade Cave. A hydrogeological study of Goat, Maple Run, and Blowing Sink caves is anticipated to be completed in 2017.

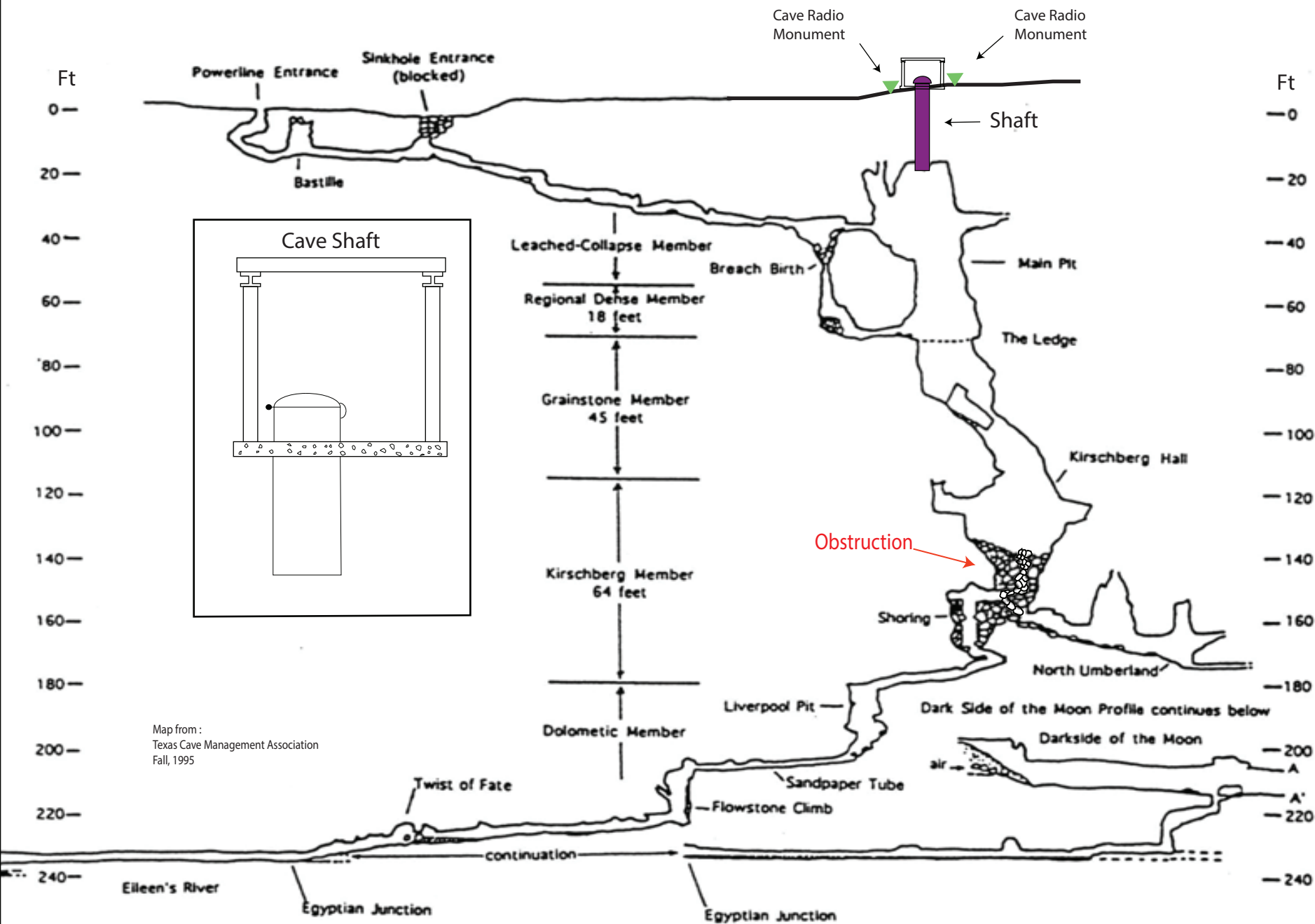
## **FM 2222 to FM 620 Bypass Connection**

TxDOT is considering a bypass connection for traffic from FM 2222 west to FM 620 that follows powerline right of way south of the current intersection. Because the current intersection is near BCP permit endangered species caves, including Tooth and Amber Caves, the consideration of alternate routes is welcome, but TxDOT, its consultants, Watershed Protection staff, and BCP staff are carefully examining possible impacts to other caves and spring-fed Panther Hollow that crosses BCP Cortana preserve.

## **CODENEXT Comments Regarding Cave Restoration**

BCP staff have identified a number of regulatory obstacles that limit cave restoration and education and provided comments for CODENEXT regulatory code writing. For example, trails are prohibited within 50 feet of caves, challenging the ability to restore, manage, or provide educational tours in caves. Restoration is treated as a development activity, which may explain why so few illegally filled caves are ever restored. BCP staff have suggested improvements to the code in order to facilitate this needed restoration work.

# Blowing Sink Profile



## **CODENEXT: Comments Regarding Restoration**

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June 7, 2017

The City of Austin has federal permit and City of Austin commitments for preserving cave ecosystems for endangered karst invertebrates, maintain forests for endangered songbirds, and maintain recharge areas for Barton Springs, that are administered by City of Austin Wildlands Conservation Department. Caves and sinkholes were filled widespread across the Austin Area historically, particularly but not limited to the Edwards aquifer recharge zone. Very limited recognition and restoration of filled caves have taken place. Instead of spearheading cave restoration, which has historically conducted by cave-trained citizens on their own initiative, the existing code has been interpreted in such a way that actually hinders cave restoration. Obviously an Environmental Resource Assessment would be an unnecessary use of resources for restoring a cave or sinkhole. Placement of silt fencing along the downstream limit of construction tends to force sediment into the cave. Alternative sedimentation controls such as mulch socks potentially bring red imported fire ants or devastating tawny crazy ants to the site and are potentially cause more damage than any benefits they bring. In practice we often use rock excavated from the cave to construct rock berms in upstream drainages to slow runoff velocity and drop fines and debris, although obviously this control is not established prior to cave excavation. Restoration, particularly cave fill excavation should not be considered the same as development site construction. The Texas Commission on Environmental Quality also regulates development over the Edwards Aquifer recharge zone and has required notification and opportunity for inspection of large scale cave restoration projects, such as those requiring heavy machinery such as backhoes, but consider this activity “maintenance” that does not require a water pollution abatement plan.

Because caves are a heritage for Austin citizens and cave education is vital for the protection of cave ecosystems and recharge and reduction in flooding, education programs involving bringing the public into specific caves are in place. Obviously these education programs must incorporate trails entering the caves, which technically violate current prohibitions for trails entering CEF buffers. There are few if any known example where a trail within 50 feet brought excessive erosion or other problem to a cave, and outweighed its educational benefits, so the restriction appears to be unnecessary. Also where caves are impacted and need restoration, a foot trail to the cave would likely be necessary to restore it.

For example in 23-3C-2020 if a protected tree has grown in a Critical Environmental Feature since the time it was filled in, the tree protection might prevent restoration of the filled cave. The following addition is recommended:

“(D) For protected trees, the Development Services department may approve an application to remove a protected tree only after determining that the tree:”

“(7) has grown in a CEF requiring restoration.”

In this case, then an arborist decides if the tree is more important than preserving a cave?

Appendix L of the Environmental Criteria Manual is titled “Restoration of Disturbed Natural Areas-Parks” but only pertains to revegetation.

#### 23-3D-5030 Critical Environmental Features

“A) Drainage patterns for proposed development must be designed to protect critical environmental features from the effects of runoff from developed areas, and to maintain the catchment areas of recharge features in a natural state. Special controls must be used where necessary of erosion, sedimentation, or high rates of flow.”

*Add “Caves and sinkholes should not be filled in, except as restoration to improve recharge or habitat function, and those historically filled must be excavated.”*

“(2) Within a buffer zone described in this Subsection:

(b) construction is prohibited”add *“except for restoration and maintenance, including removal of trash dumps and fill”*.

(d) add *“ local trails designed for education at the CEF site are allowed.*

“(3) If located at least 50 feet from the edge of the critical environmental feature, the prohibition of Subsection ©(2) (b) does not apply to:

(a) a yard ~~or hiking trail~~,”

An alternative might be to distinguish and prohibit constructed trails, such as sidewalks, but allow undeveloped foot trails.

In many cases cave restoration can not be accomplished simply because of lack of water for required revegetation and installation of irrigation system required for a development site. Particularly on park/preserve lands where irrigation sources may not be available, a cave that has 80% of its trash or fill removed should be considered successful restored even if natural revegetation may take longer than an irrigated restoration.