

# SUNKEN GARDEN



Sunken Garden is the home of one of the three principal springs of Barton Springs. It is located to the south of the creek, downstream from the Pool by several hundred feet. While the centerpiece is the spring itself, Sunken Garden is also noteworthy for its stone retaining walls, concentrically arranged to focus attention on the spring. Sunken Garden was built in 1937 under the Youth Progress Administration, a program of the FDR administration. Interestingly, an earlier building existed on this site, and part of its foundation was integrated into the construction we see today. While Sunken Garden is, indeed, an important historical element of the park, it is also important as one of the homes of the endangered Barton Springs Salamander.

The stone walls are generally 12" thick unreinforced masonry; their heights range from 6 ft. to 12 ft. tall. While some of the walls are relatively straight and in good repair, others are cracked and out of plumb; sometimes by as much as 12". Much of this failure can be traced to structural inadequacy; walls too narrow and tall, and inattention to hydrostatic pressure. Some of it can also be traced to tree roots.

Historically, the flat surfaces between the walls were paved with limestone paving stones, that created popular places for picnics and other recreational activities. Those stone surfaces appear to still be in place, but they are concealed by soil and weeds. Because it is an

*Sunken Garden as it appears today. Walls have collapsed, some trees are in poor health and the limestone paving stones are concealed by soil and weeds.*



*Sunken Garden during the 1980s. Trees are smaller and stone walls are intact. Though limestone paving is overgrown, the grounds are mown and neat.*

endangered species habitat, its waters are fenced to prevent public access.

Sunken Garden is accessible by the trail along the southern edge of the creek and by the Zilker Trail, and it is located close to parking. Prior to falling into disrepair, it was a popular attraction, with newspaper accounts reporting 250 picnickers on a given Sunday. Today it is a curious artifact that is poorly understood, and only casually visited. For most, it is not a destination.

Staff reports that Sunken Garden is subjected to harsh treatment after hours. The fence is occasionally cut, and trash and debris are commonly thrown into the water.

### ***Recommendations***

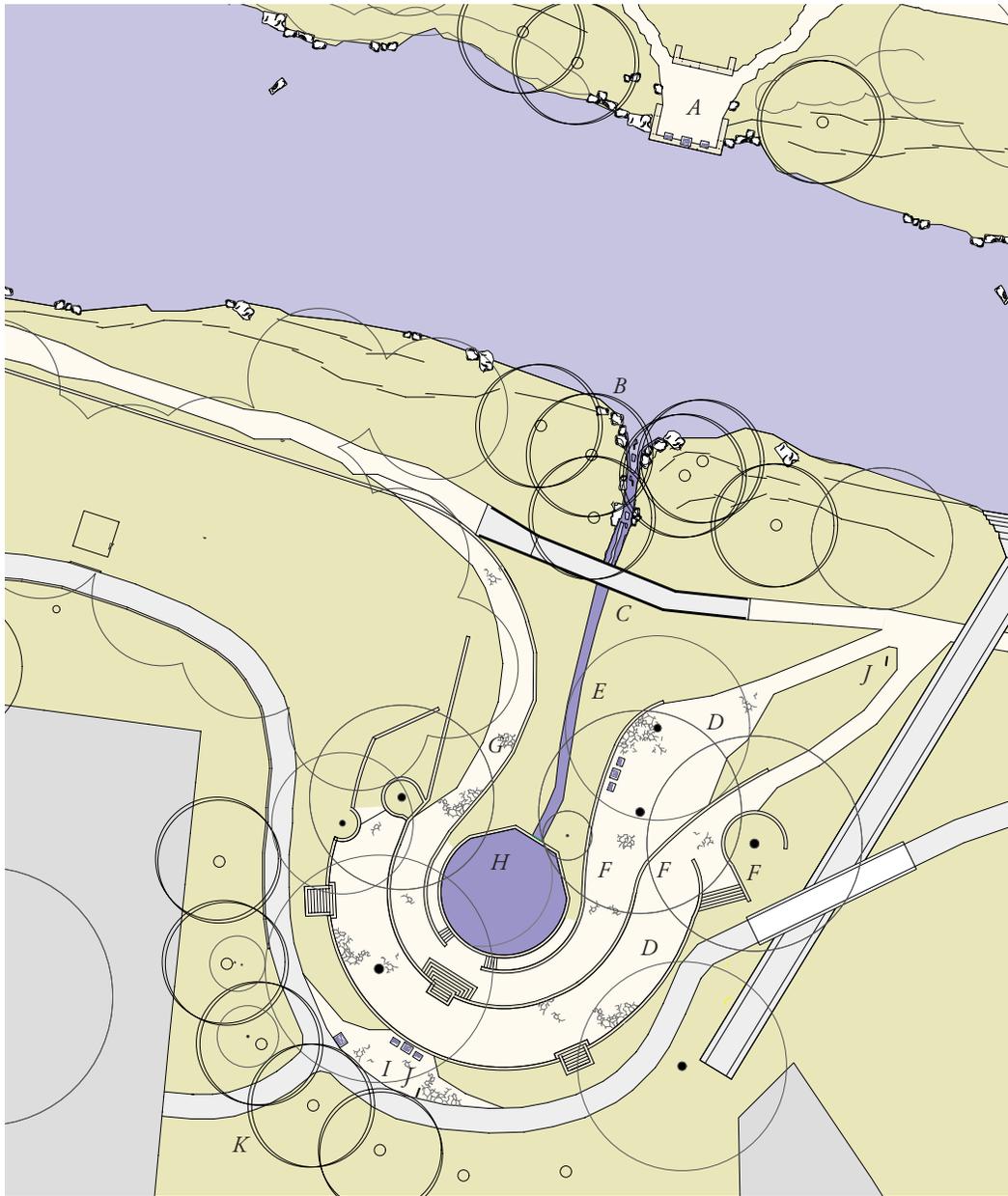
#### ***Reconstruct salamander habitat***

The Sunken Garden should be rehabilitated in two parts with the first part to be undertaken in the short term. This work should focus on those portions that most closely affect the salamander habitat; the spring vessel, and the wall immediately above it and the spring run. The goal should be to rehabilitate the architecture, but more importantly to create better conditions for increasing the salamander population here.

This work should include cleaning silt and debris from the bottom of the vessel and repairing its walls. An operable gate should be installed at the outflow to provide a tool for the biologists in the management of the habitat. A new fence should be installed, located so that it balances the security of the habitat with needs for visitor comfort and enjoyment. The fence should have conveniently located gates to facilitate maintenance, and the new fence should be shorter if possible to facilitate more comfortable viewing. This work should include landscape additions to complement the riparian landscape work already in place, and it should include landscape attention to the understory in the fenced area to either side of the spring run. Additional pecans can be planted within the spring fence as spots of sunlight emerge. The planting of riparian vegetation inside the spring fence, including coralberry, river fern, pigeonberry, beautyberry and inland sea oats, should continue. Above the spring walls near the Zilker Trail, a row of larger caliper (4"-5") trees, such as cedar elms or chinquapin oaks could be added, following the line of the retaining wall, to replace the large pecans that have been lost.

Special attention should be paid to the removal of nuisance species. This work should also include safety measures to protect the public from collapsing walls in other parts of the complex. And it should include wayfinding and interpretative materials in the effort.

This work should be undertaken by a team that includes a civil/structural engineer, an



### Sunken Garden

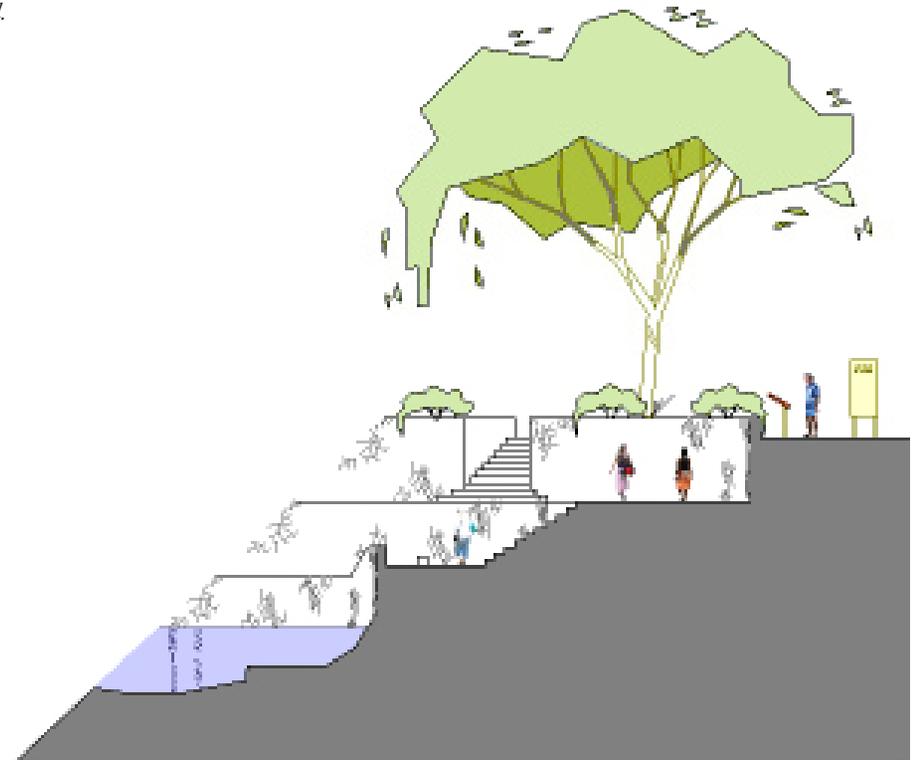
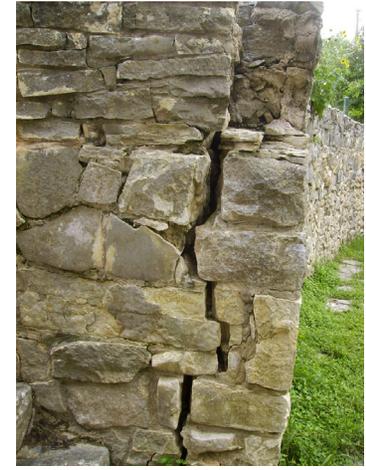
- A. Create an overlook on the north side to highlight the waterfall spilling from the Sunken Garden spring run. Integrate interpretative graphics into the experience to “tell the story” of Sunken Garden.
- B. Plant new cypress trees to frame the waterfall.
- C. Adopt a long-term goal to replace the existing bridge with a more attractive, more transparent bridge. The existing bridge is so bulky as to obscure views to one of Barton Springs’ more unusual features.
- D. Reconstruct stone paths to encourage walk-through traffic. Integrate interpretative materials into the experience.
- E. Working with salamander biologist and Friends groups, propose new groundcover and understory planting scheme.
- F. Repair and/or rebuild the historic stone walls. Reconstruction should use modern techniques to promote long service life. Coordinate the construction efforts with tree replacement to minimize disruption.
- G. Replace the existing fence with one that is shorter and more transparent. Reposition the fence so that visitors can walk the site more freely, while still being mindful of the importance of protecting the salamander habitat.
- H. Rehabilitate the stonework to complete the stone cylinder. Add an operable sluice gate. Remove sediment and debris from bottom of pool.
- I. Take advantage of this elevated position and create a new overlook. Integrate interpretative materials into the experience to “tell the story” of Sunken Garden.
- J. Include wayfinding, such as a site map and site signs.
- K. Plant new shade trees to complete the planted frame around the site.



*Sunken Garden in 2007. Some walls have collapsed, and the landscape is less organized. The fence is to protect the salamander habitat.*



*Stone stairs are in disrepair (above and right). Steps should be rehabilitated to improve footing, handrails should be added.*



*A rehabilitated Sunken Garden could be a suitable venue for small concerts, outdoor weddings, family reunions and the like.*



*Some walls are leaning precipitously. Strategy for stabilization should account for historic preservation, long-term service and public safety.*



*One short-term goal is to repair the walls of the spring vessel. In the same effort, add an operable sluice gate and remove sediment.*



*Repairing and stabilizing this crack will require the removal of the tree.*

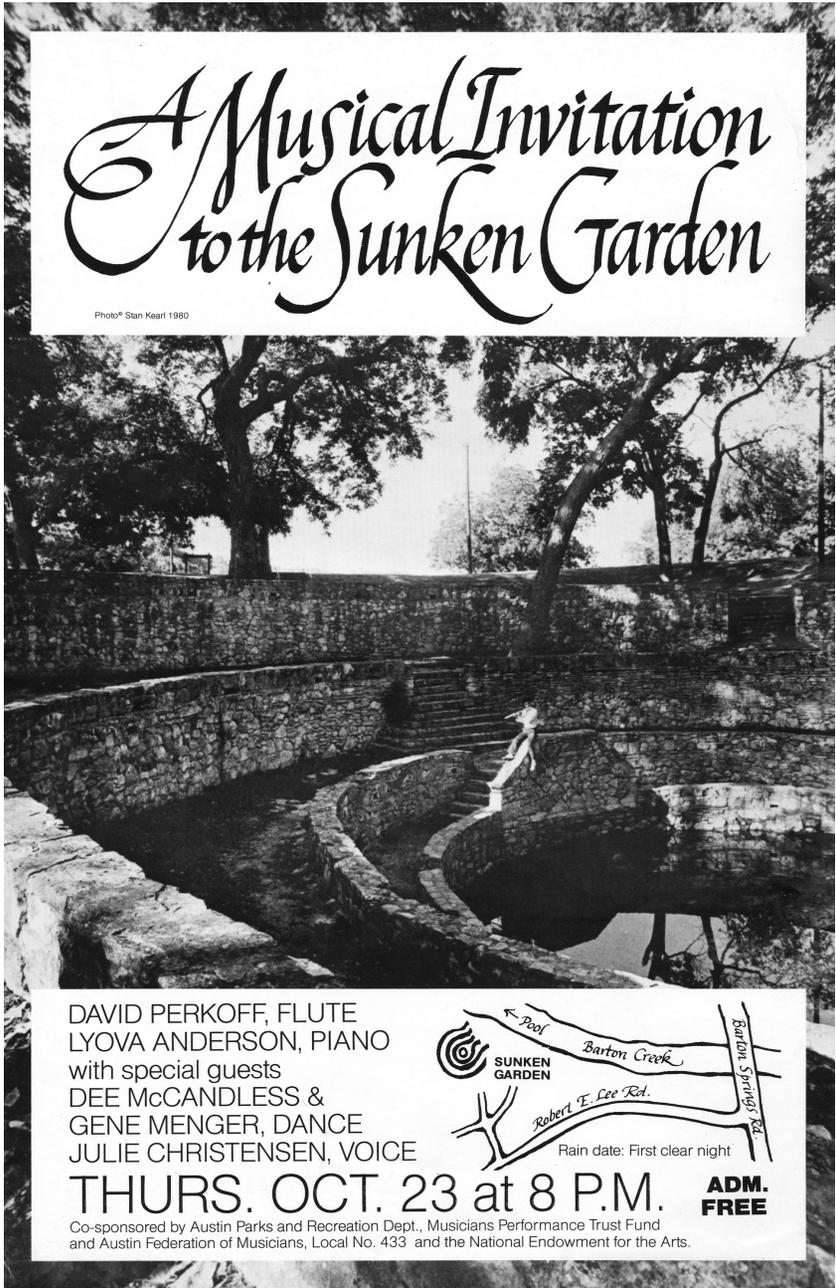
environmental engineer, an architect experienced in historic preservation, a landscape architect and an interpretive planning designer. Due to the site's ecological sensitivity, this project will likely require permits from U.S. Fish and Wildlife among others.

*Enhance the site with masonry repair and clearer circulation*

Longer term, efforts should be made to make Sunken Garden a more active amenity. If it were in good repair, it could be a suitable venue for small concerts, outdoor weddings, family reunions and the like. And if it were more actively used, it would likely be less vulnerable to mischief. Furthermore, more activity is likely to translate into more active community stewardship. But for it to be a suitable venue, it needs to be in attractive and in good repair. To that end, this plan recommends that all of the masonry in the complex should be repaired including walls, stairs and stone walking surfaces. Tree lights should be considered for gentle evening illumination, and interpretive graphics should be integrated into the complex. Special attention should be paid to creating pedestrian traffic through the complex by clearly articulating the path from the creekside trail up and through the complex, and then back down to the trail again.

*This 1980 performance featured dancers, musicians, professional lighting and a chorus. A grand piano was even lowered into the complex for the occasion. Pianist Lyova Rasanov said, "Sunken Garden is a wonderful place for a performance. The acoustics were magical."*

*Poster: Courtesy of Lyova Rasanoff.*



**A Musical Invitation  
to the Sunken Garden**

Photo © Stan Kears 1980

DAVID PERKOFF, FLUTE  
LYOVA ANDERSON, PIANO  
with special guests  
DEE McCANDLESS &  
GENE MENGER, DANCE  
JULIE CHRISTENSEN, VOICE

**THURS. OCT. 23 at 8 P.M.** **ADM. FREE**

Co-sponsored by Austin Parks and Recreation Dept., Musicians Performance Trust Fund and Austin Federation of Musicians, Local No. 433 and the National Endowment for the Arts.



← Pool  
SUNKEN GARDEN  
Barton Creek  
Robert F. Lee Rd.  
Barton Springs Rd.  
Rain date: First clear night



*A dozen years later, Sunken Garden on February 19, 1993. The landscape is still nicely groomed and the flagstone paving stones are not yet obscured by overgrowth. According to photographer Alan Pogue, the wall section collapsed in the flooding of 1991. Note that the wall section to its right appears to be leaning as does the wall above it.  
Photo: Alan Pogue*

*Sunken Garden: A key to Eliza Spring*  
While Sunken Garden is located in a quiet part of the park, Eliza Spring is right in the thick of the heaviest visitor traffic. While Sunken Garden has a struggling salamander population, Eliza has the largest and most robust. While Sunken Garden has a peripheral connection to LBJ (he was the Texas Director of the Youth Progress Administration), Eliza has a very direct connection to Andrew Zilker, the park's namesake (he built the Eliza Spring amphitheater). For all these reasons, Eliza would normally be rehabilitated first. But Eliza is the home to so much of the salamander population that a construction mishap there could jeopardize the entire species. This dire prospect suggests that a pre-condition to rehabilitating Eliza Spring should be to build a sustainable salamander population in another location. Though not perfect, Sunken Garden is a good candidate. Unlike the Main Spring, the waters of Sunken Garden are fenced, which protects them from public traffic. And since Sunken Garden is not part of the Pool, its waters can be managed to better optimize conditions.

### ***Notes on Masonry Restoration***

The stone walls of Sunken Garden are built of unreinforced masonry, which are cracking and leaning in places, and in some cases have failed completely and have collapsed.

These kinds structural problems are probably caused by a number of factors; tree roots too close to the back of the walls, soil pressure causing walls to topple and in some instances the walls are simply too tall and slender. At stair locations, corners can be seen to be pulling apart, which is likely due to insufficient “keying” of stones across the intersection. The challenge for the historic preservation architect is to find solutions that restore the walls in minimally intrusive ways, which takes on special significance in cases like this, where the repairs to the failing parts must be integrated seamlessly with adjacent walls that are structurally intact.

This planning team considered a number of techniques, noting that each has advantages and disadvantages. The team considered the range of structural conditions this complex presents, and concluded that a robust solution would likely include the use of more than one strategy. The process of designing the remediation should begin with soils tests to determine characteristics. Then some exploratory digging should be done to reveal the size and profile of the footings.

### *Concepts*

#### *Concrete Backer Wall*

Were these walls new, the recommendation would be easy. Simply dismantle the stonework, build a series of concrete backer walls, and rebuild the stonework against the concrete walls as a veneer. But the dismantling would destroy the original idiosyncratic masonry patterns, so the result would be more of a replica than a restoration. Plus, using this technique only in the damaged areas would introduce new problems of differential movement, because the repaired parts and the original, intact parts would behave differently, because their structural systems would be different. While the use of this technique may, indeed, be necessary in limited areas, it should not be seen as the first choice.

#### *Soil Anchor*

Openings are made in the walls for helical screws, which are driven horizontally back into the soils about five feet. A steel compression plate would then be affixed to the exposed end of the screw, securing the wall in position. These screws would likely be placed 48” apart horizontally, with two rows required; one at the one-third height and the other at the two-thirds height.

This technique would likely limit the need to dismantle walls and rebuild them. Further, some leaning parts might be pushed back into level before installing the screws. In any event, it would require digging a trench behind the wall to relieve soils pressure and to allow for pushing the walls back if required. Once the walls are repointed and repaired, new soils would be installed.

The soil anchor technique offers the potential for preserving much of the historic fabric of the walls. One potentially negative consideration would be the visible pattern of steel compression plates. They would certainly not be “original”, but some might argue that they authentically communicate the nature of the problems that were addressed.



### *Geosynthetic Mesh*

With this technique, a trench is dug behind the wall to expose its back side, and a series of stainless steel anchors is epoxied into the stonework. Then the geosynthetic mesh (Tensar is one brand name) is attached, and buried horizontally back into the soil. Clearly, the installation of the mesh would need to be coordinated with the reinstallation of the soils behind the wall. Two rows of the mesh would likely be required, one at the one-third height and the other at the two-thirds height.

Like the soil anchor technique, this would likely allow for much of the preservation of the historic wall fabric, and some of the leaning parts might be pushed back into plumb before installing the mesh. One advantage of the mesh over the soil anchor technique; it would leave no obvious artifact of the repairs.

### *Braces*

With this technique, the wall would simply be propped up from the front using visible braces. The planning team visualized this technique using a steel brace every 48" along the remediation area. Because the braces would be so obvious, this would likely be the most controversial solution. But some might argue that it is the most authentic solution, in that it frankly expresses the challenges faced, and it clearly distinguishes between original fabric and the artifact of repair.

Regardless of the technique, trenching behind the walls should be anticipated. They should be backfilled with stable material (this could be crushed limestone or it could possibly be reclaimed original soils), which should be topped by a layer of clay to limit water penetration. Requirements for repair work to the wall footings is a near-certainty.

Drainage is always an issue with retaining walls, and in this case, the land should be graded away from the walls where possible. In the flat limestone walking surfaces, area drains should be integrated into them inconspicuously.

The choice of restoration techniques should be based on a careful evaluation of conditions, such as height of wall, degree of structural failure and contributing factors like tree roots or soils characteristics. It should also consider the skill of the work force, and, of course, public safety. The final design will likely include a range of nuanced decisions. Some walls are out-of-plumb, but not by much, so they may be deemed to be stable enough and not in need of remediation. For some of the lesser cracking, it may be possible to simply repoint without trying to realign the pieces, an especially likely possibility at corners near the stairs.

### *Stairs*

The stairs are defining features of the place, and, obviously, they are the clearest way to negotiate the level changes. But the tread surfaces are uneven and with some stones missing, they present a hazard. The stairs should be rebuilt with new, even treads. Steel handrails should be added for visitor safety and convenience. During the design process, the architect should coordinate with City of Austin code officials regarding provisions in the Uniform Code for Building Conservation governing the reconstruction of historic elements that do not comply with today's codes.

#### *Public Participation*

There are many aspects of this project that will be of keen interest for the public. The work will be disruptive, so the place will be off-limits during construction. And some of the techniques would leave visible artifacts of the repair, which the public will want to understand and discuss beforehand. And perhaps most controversially, the work will require the removal of some large (though in some cases unhealthy) trees. All of these matters should be thoroughly aired with the public.