

Austin Parks and Recreation Department
Barton Springs Pool Gravel Bar Removal 2011
Update

Barton Springs has experienced many floods through the years. (See photographs 1-3) The smaller floods tend to deposit silt and small flood debris in the pool while the larger floods deposit flood debris that includes gravel and rocks. In 1998 and again in 2000, Barton Springs experienced floods which deposited material in the pool of such a great magnitude that it formed a thick gravel bar in the deep end of the pool, making the water roughly five feet deep.

Before the Barton Springs Salamander was listed on the endangered species list with the U.S. Fish and Wildlife Service, removal of flood debris was a more streamlined endeavor. A dragline crane was driven onto the pool beach and the debris was loaded into dump trucks and hauled to another location. However, with the listing of the salamander, PARD experienced challenges designing a technique to remove flood debris that would be sensitive to the grounds (trees), the Barton Springs Salamander, the aquatic environment and the patrons. An engineered approach to remove debris incorporated close review from PARD, WPD, USFWS and the community.

In 2006, PARD hired American Underwater Services to remove the gravel bar. This company utilized a vacuum technique to remove material from the pool. The system extracted approximately six-hundred cubic yards of small material and silt; however it failed to extract larger material. It was determined that their method was very effective in removing material less than 4" in diameter but not effective at removing the amount and size of material that made up a large portion of the remaining gravel bar.

In 2009, Weston Solutions was hired to develop a system to remove the remaining gravel bar. Weston Solutions worked with PARD, WPD and the community to develop a plan that they thought would best meet current needs. Due the sensitivity of the area, a plan was developed that used a crane situated on the south lawn to remove the remaining portion of the flood debris. A temporary pad was placed on the south hill to provide a stable foundation for the crane and a temporary road was installed to facilitate removal of material. A cofferdam was constructed around the gravel bar. (See photographs 4-10) This area was dewatered and the crane lifted front end loaders onto the pool's bottom. (See photographs 11-12) The front-end loaders placed the gravel into piles and the crane's clamshell lifted the gravel into dump trucks. (See photographs 9 & 12)

Six-hundred and one tons, approximately six-hundred cubic yards, of material was removed from the dewatered area during the period of January 24, to March 11, 2011. As planned and requested by concerned citizens, at least one foot of gravel was left on the bottom for plants to take root and grow. Watershed Protection staff is currently working to acquire surveying services to determine the new elevation of the gravel substrate overlying the pool bottom. The bottom elevation prior to gravel removal is shown on the attached topographic sheets. (See photographs 13-14)

Overall, this project was successful at removing most of the gravel bar as planned, however there was one concern that resulted in a reduction of the amount of debris removed. The original plan anticipated being able to remove debris closer to the northern edge of the pool deck, but in order to keep the cofferdam stable, gravel was not removed within twelve feet of the inner edge of the frames; the limit of gravel removed was twelve feet further south, toward the middle of the pool. (See photograph 5)

Another challenge was the lack of availability of a twelve foot cofferdam needed to dewater the deepest area, located near the pool's dam. To cross the deep area, the cofferdam was constructed on top of "Super Sacks" to increase its height. These plastic and mesh sand filled sacks measure 3' x 3' x 3' and weigh 1 ton. (See photographs 8 & 10)

As a result of the listing of the salamander as an endangered species any method used to remove debris has to provide the most environmental protection possible. With this in mind, the process used was effective in removing large and small material. Although price per ton, or cubic yard, was substantially higher than vacuum method, much of the material removed was too large to eliminate using the vacuum method.

The same or a similar method will likely have to be used in the future if large-scale removal is again required, although other methods will be investigated prior to moving forward. Minor adjustments that would be necessary to achieve the maximum removal would be considered. These adjustments may include different methods of isolating the work area, drawing down water elevation in the pool, or alternative cofferdam footprints.

Dr. Laurie Dries is working with other WPD staff on a renewal for the US Fish and Wildlife Service 10(a)(1)(b) permit for operations of Barton Springs Pool. She is trying to incorporate as many maintenance functions as possible in the document and it is likely that some less invasive, routine cleaning techniques, like vacuuming, will be included in the renewed permit. Some larger, more invasive, or unanticipated projects will require additional federal and state review, and may require additional permits. However, every effort will be made to incorporate routine maintenance projects in the new operating permit.



Picturesque and peaceful Barton Springs was turned into a raging torrent that left debris and destruction after this flood rolled in on the morning of June 17, 1958. This flood was a "good-un," but some floods have circled the bathhouse. [AUSTIN HISTORY CENTER - PICA 22648]

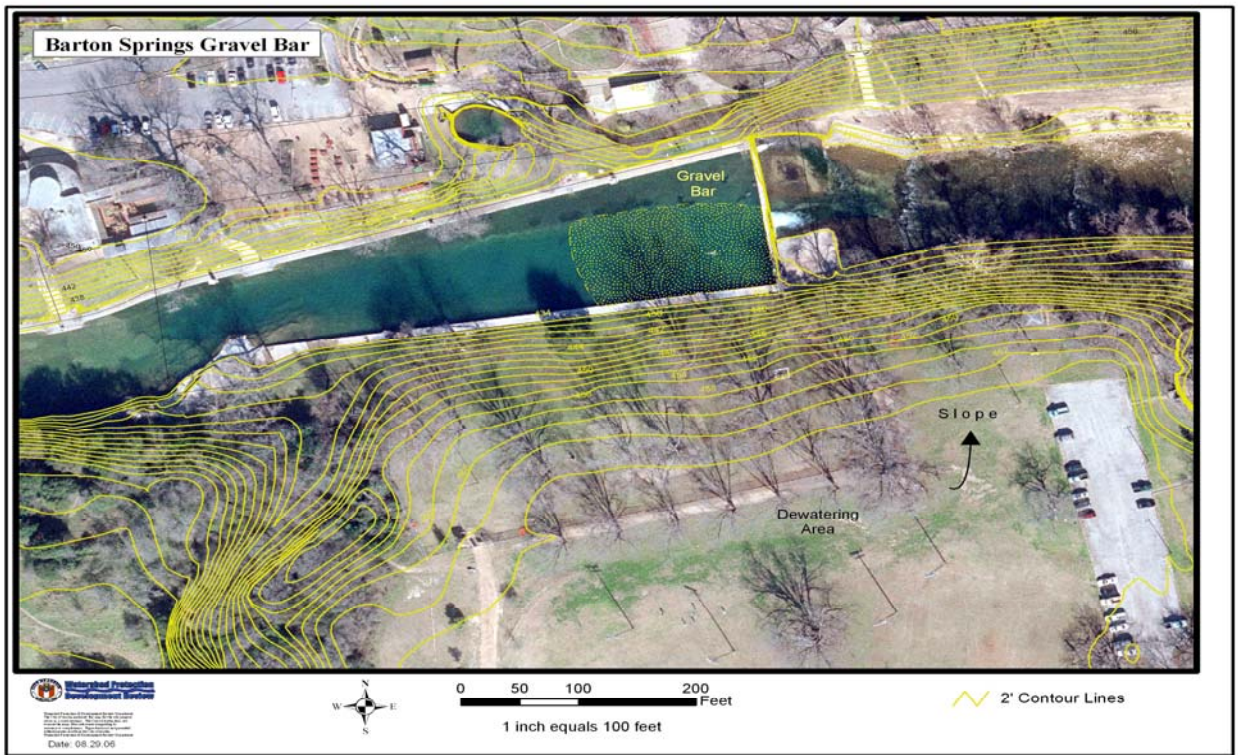
Picture #1



Picture #2



Picture #3



Picture #4



Picture #5



Picture #6



Picture #7



Picture #8



Picture #9



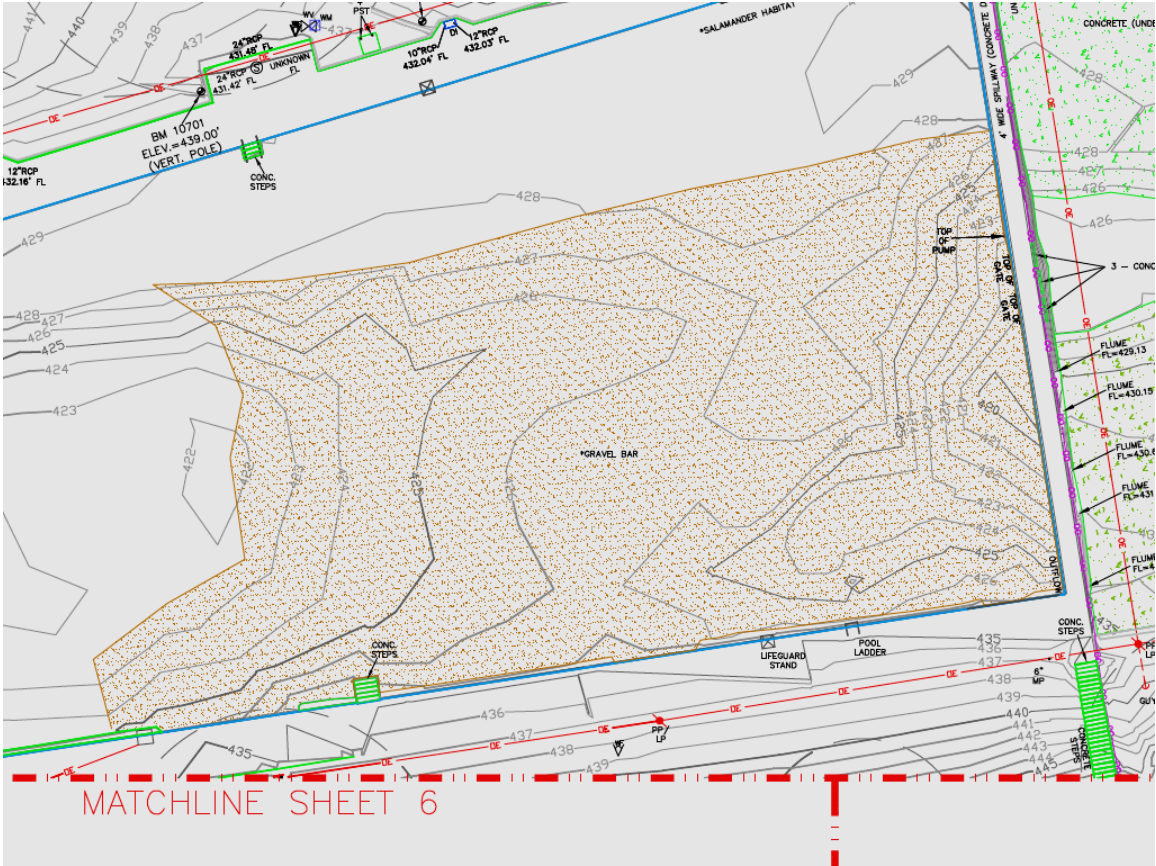
Picture #10



Picture #11



Picture #12



Picture #13